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FOOD SECURITY AND VULNERABILITY ANALYSIS

NEPAL ECONOMIC, AGRICULTURE, AND TRADE ACTIVITY

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Nepal Economic Agriculture, and Trade Activity—Subsector Selection Report
Contract No. EEM-I-00-07-00008, AID-367-TO-11-00001
United States Agency for International Development
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CONTENTS

ACRONYM LIST

ADBL	Agricultural Development Bank Limited
BDS	Business Development Services
BPA	Beijing Platform for Action
CBS	Nepal Central Bureau of Statistics
CEAPRED	Center for Environmental and Agricultural Policy Research Extension and Development
CEDAW	Convention on Elimination of All Kinds of Discrimination Against Women
DADO	District Agricultural Development Office
DAG	Disadvantaged Group
DDC	District Development Committee
DHS	Demographic and Health Survey
DoA	Department of Agriculture
DoL	Department of Livestock
EFNSN	Ensuring Food and Nutrition Security in Nepal
F&V	Fruits and Vegetables
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FSAN	Food Security Atlas of Nepal
GDP	Gross Domestic Product
GESI	Gender and Social Inclusion
GoN	Government of Nepal
H/A	Height for Age
HA	Hectare
HH	Household
IFPRI	International Food Policy Research Institute
IIDS	Institute for Integrated Development Studies
INGO	International Non-Governmental Organization
JT	Junior Technicians
JTA	Junior Technician Assistants
KG	Kilogram
LGCDP	Local Government Community Development Program
MOAC	Ministry of Agriculture and Cooperatives
MoF	Ministry of Finance
MT	Metric Tons
NBF	Nepal Business Forum
NCCI	Nepal Chamber of Commerce and Industry
NEAT	Nepal Economic Development Agriculture and Trade
NeKSAP	Nepal Food Security Monitoring System
NGO	Non-Governmental Organization
ODI	Overseas Development Institute
TE	Triennium Ending
USAID	United States Agency for International Development
VDC	Village Development Committee
W/A	Weight for Age
W/H	Weight for Height
WFP	World Food Programme
WOCAN	Women Organizing for Change in Agriculture and Natural Resource Management

Executive Summary

The Nepal Economic Development Agriculture and Trade Activity (NEAT) is a 30-month USAID-funded project that aims to substantially improve Nepal's agricultural economy. Led by Chemonics International Inc., NEAT will have a transformative impact on Nepali society – uplifting the country's poorest and most food insecure, and strengthening the viability of the agricultural value chains they rely on or have the greatest need to improve. NEAT will also play a core role in strengthening access to microcredit, while addressing many of the trade and policy issues that create imbalances between Nepal and its regional neighbors.

Our analysis has used several factors to determine the program's geographic area of operation, including targeting the most food insecure (in terms of availability, access and utilization), taking into account the need for some level of market access; opportunities to address the underlying causes of food insecurity through appropriate interventions; and achieving scale with available resources during the program's lifetime, including by leveraging synergies with NEAT Component 2.

Consequently, our assessment recommends that NEAT focus on Midwestern and Western Hill and Terai districts: Banke, Bardiya, Dang, Pyuthan, Rukum, Rolpa, Salyan, Surkhet, Dailekh and Jajarkot(Midwest region); and Arghakhachi, Gulmi, Palpa and Kapilvastu (Western).

NEAT will make important inroads towards substantially increasing agricultural productivity and it will help reverse the trend of food insecurity around the country. At present, 66 percent of Nepali households report food shortages and nearly half of children under five are undernourished.

The current study is a core element of NEAT's Component 3, which focuses on the underlying causes of food insecurity among vulnerable households. Specifically, this *Food Security and Vulnerability Analysis* provides programmatic recommendations for geographic implementation, using available published data and findings from direct research in the field. It also provides a rationale for broad regional targeting, and specific district, Village Development Committee (VDC) targeting, and gender and diversity considerations.

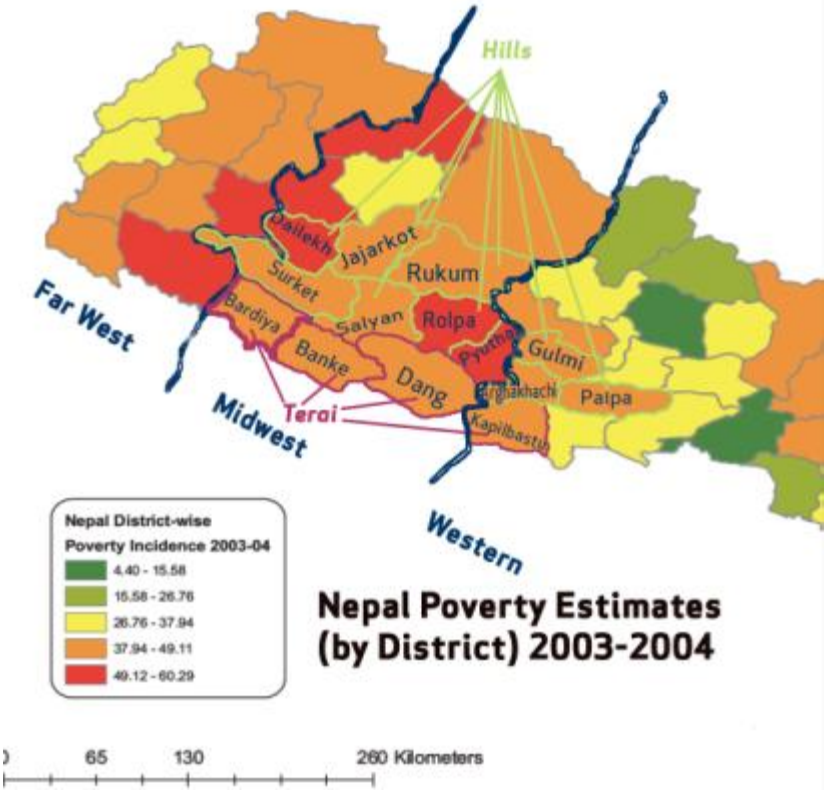
SECTION I JUSTIFICATION FOR GEOGRAPHIC TARGETING

Three primary factors are considered in this analysis, based on the stated objectives of Component 3.

- Targeting the most food insecure populations as defined in terms of food availability, access, and utilization.
- Effectively addressing the underlying causes of food insecurity through interventions that improve food availability and access.
- Achieving scale using available resources within a 30-month timeframe.

We strongly recommend, based on our assessment, that we focus the NEAT project in the Midwestern Hill and Terai districts and four bordering Western Hill and Terai districts as follows: Banke, Bardiya, Dang, Pyuthan, Rukum, Rolpa, Salyan, Surkhet, Dailekh, and Jajarkot in Midwest region; and Arghakhachi, Gulmi, Palpa, and Kapilvastu in Western region. Please see the map below.

Figure 1: Nepal Poverty Estimates and Geographic Targets



We explain our rationale below, by outlining our findings in terms of Nepali Food Availability, Access and Utilization, and the ways in which our analysis influences our further geographic selection and illustrative activities.

Detailed information regarding Nepalese food availability and access is located in *Annex B (National Level Food Insecurity Data).*

A. Targeting the Most Food Insecure

According to USAID, food security is defined as "having, at all times, both physical and economic access to sufficient food to meet dietary needs for a productive and healthy life. A family is food secure when its members do not live in hunger or fear of hunger."[1] Food security consists of three essential elements: Availability, Access and Utilization.[2]

[1] http://www.usaid.gov/our_work/agriculture/food_security.htm
[2] The term "absorption" is used instead of utilization in FAO's definition of food security.

Nepalese households face significant challenges in achieving food security in these three key areas. Further evaluation of household food insecurity was needed in order to identify the geographic areas where NEAT can improve food security among vulnerable populations. As such, this study analyzes existing food security and vulnerability data derived from a number of secondary sources in an effort to assess the relative degree of food insecurity of a region or district and to prioritize regions, districts and VDCs. Data on crop and livestock production was reviewed as well as information regarding poverty, with a primary focus on food availability and access criteria.

Availability: Most limited in Midwest and Far West Hill and Mountain Regions

With regard to food availability, the Midwest and Far West Hill and Mountain districts face the greatest challenges. These regions suffer from rainfall deficits and overall inadequate production and productivity of staple grains and other crops. Access to roads and markets is limited, particularly in the Midwest districts. Both the Hill and Mountain districts require improved access to irrigation, but there is greater potential of addressing this issue in Hill districts. All of the Midwest and Far West Hill and Mountain districts lack adequate access to quality inputs such as seeds and fertilizers, greatly limiting productivity. These regions also struggle with limited access to electricity. Additionally, the lack of roads severely hinders market linkages for Mountain districts. As such, there is less opportunity to improve food supplies through trade with Terai.

In order for Hill households to purchase food from the Terai, they must earn substantial income through some means. As agricultural production is nearly the sole economic activity in rural Nepal, this cash must be earned through sales of agricultural products. The region with the most market infrastructure to absorb these products is in fact the Terai. The particular part of the Terai where Hill products are sold will depend on the road network connections between the regions. In most cases, road networks lead to cities with high population numbers and density, often with trading links to India. While in some cases the road networks lead to towns within the same development region, in others, roads connect to towns in neighboring regions. For instance, the road network connections from Pyuthan and Rolpa, two Northwest Hill districts with very high poverty incidence, link most directly to Butwol in the Western Terai, not to Nepulgunj in the Northwest Terai. Thus, this interdependent relationship between Hills and Terai crosses regional administrative borders.

Access: Midwest and Hill districts host higher numbers of impoverished individuals

The percentage of poor people living in the Midwest development region is higher than in all other regions, and the proportion of Midwest districts with high poverty prevalence is greatest. The proportion of poor people in Far West districts is also high, but the total population of that region is somewhat lower as the region is slightly smaller. The percentage of poor people living in Hill districts is also higher than in all other districts. Per capita landholdings are smaller in Hill districts than elsewhere, and a higher percentage of the overall poor population reside in the Hills. While food prices are higher in Mountain districts due to poor road access and high transportation costs, the low population numbers and density mean that a lower proportion of Nepal's poor live in those districts. Populations in the Terai are negatively impacted by shocks that limit their food access, despite the fact that productivity is higher and poverty prevalence is somewhat lower. In fact, the actual number of poor is very high due to the high population. Some Western Hill and Terai districts

experience the same levels of poverty as Midwestern districts, although this is often not recognized because overall, Western Region is not viewed as poor.

Utilization: Highest stunting prevalence in Western Mountains and Midwest Hills; Highest wasting prevalence in Central Terai

NEAT Component 3 intends to address the longer-term underlying causes of food insecurity, focusing on addressing longer-term issues rather than addressing short-term emergency situations. As such, the project seeks to work where chronic long-term poverty is most significant and where stunting levels are highest. The highest stunting prevalence in Nepal is in the Western Mountains at 66.8 percent. However, among the Hill districts, the Midwestern and Far Western Hill districts have the highest malnutrition prevalence. Stunting and underweight prevalence in the Midwestern Hills is highest among Hill districts, while wasting prevalence is highest in the Far Western Hills. Stunting prevalence in the Midwestern Hills at 65.5 percent is second highest in Nepal. Wasting prevalence is highest in Nepal's Terai regions, which experience levels similar to those found in humanitarian crises. While the Central Terai wasting levels are highest, wasting levels throughout the Terai are unacceptably high.

It should be noted that NEAT does not intend to implement nutritional interventions to address either stunting, wasting, underweight, maternal malnutrition, or work to achieve any other health or nutrition outcome. While it is possible that nutrition impacts could result from project interventions that improve food availability and access it is nearly impossible to attribute nutritional impacts to a program of this type without specific nutritional components in the program. Thus, it is not within the manageable interest of NEAT to measure nutritional impacts. In addition, while some of the interventions may result in improved coping capacity among beneficiaries, it is not the specific aim of NEAT to improve disaster risk mitigation or response, or reduce vulnerability to shocks.

B. Effectively Addressing the Underlying Causes of Food Insecurity

NEAT will address several challenges affecting chronically poor areas of the Midwest and some Western districts. These include provision of training in productivity, facilitating improved access to inputs such as high yielding seeds and fertilizers. In addition, NEAT hopes to support small-scale irrigation that will not only improve yields, it will save labor and time while enabling production of more high value products, such as vegetables, that can increase household cash earnings. Our approach will be private sector driven, and will depend to a great extent on beneficiaries accessing markets, value chains, and credit. Moreover, linking beneficiaries to output markets will be important. If productivity is enhanced yet margins earned from the sale of farmer products remain too low for households to sustain production, not to mention food purchase, farmers will eventually stop producing.

Taking these things into consideration, there are major constraints that make working in Mountain districts problematic for NEAT. In particular, the road network is limited in the Mountains, resulting in reduced access to quality inputs that help enhance productivity. Furthermore, this severely constrains Mountain farmers, who face challenges in selling their products to higher order markets and will likely be limited to retail sales within their communities or other types of small-scale trading. The following image helps illustrate this point.

Additionally, while irrigation is greatly desired by farmers in Mountain districts, there is limited non-irrigated land available. Overall, the Mountain regions will benefit most from infrastructural improvements that connect population centers to one another and to the outside world. While some food security improvements can result from increased productivity, little of this can be marketed, and inputs may need to be brought in on a subsidized or free basis. These types of interventions are beyond the scope of the NEAT project.

Terai districts suffer from pockets of poverty, and a large portion of the population is vulnerable to cyclical shocks, such as flooding. As the Terai tends to be an area of surplus production, economic growth in the Terai belt has significant potential to catalyze economic growth in nearby Hill districts, where production and market potential are less well developed. The Hills can potentially serve as a market for the surplus production of the Terai. While most Hill residents cannot fulfill all their staple requirements through their own production, they can purchase grain and inputs from the Terai. In order to afford these purchases, Hill residents will need to build their incomes from farm product sales – most of which will be to the Terai. Thus, the strength of the market and commercial linkages from the Terai into the Hills will determine the efficiency of product flows from surplus to deficit areas, and thus a more even distribution of economic benefits.

C. Achieving Scale within a Limited Timeframe

The NEAT project is a short-term project that seeks to maximize impacts in its sectoral components in order to achieve mutually supporting goals. It is therefore imperative that the project leverage opportunities while avoiding activities that do not produce results. To ensure that we most effectively utilize our resources to achieve results, we propose targeting specific geographic locations and Village Development Committees (VDC) as detailed in the following section.

SECTION II RECOMMENDATIONS

A. Geographic Targeting

Based on the need to target the most food insecure populations – where there is also a potential for NEAT to effectively improve food availability and access and for the project to achieve scale with available resources in a limited timeframe – the NEAT project will work in the Midwestern Hill and Terai districts and four bordering Western Hill and Terai districts as follows: Banke, Bardiya, Dang, Pyuthan, Rukum, Rolpa, Salyan, Surkhet, Dailekh, and Jajarkot in Midwest region; and Arghakhachi, Gulmi, Palpa, and Kapilvastu in Western region.

The following geographic targeting criteria will apply:

- NEAT will not work in Mountain districts, or in areas not well connected by roads.
- NEAT Component 3 will seek to build synergies and market linkages between Hill and Terai districts according to the nearest road connections.
- NEAT will work in ten Midwestern Terai and Hill districts due to high poverty levels in these areas and will thus reach a larger number of food insecure households. It will also work in four Western Hill and Terai districts with high poverty incidence, large populations, and with road connections to Midwestern Hill districts.
- Opportunities to leverage strategic synergies between Components 2 and 3 will entail geographic coordination in Midwestern and Western Districts between these components

The following paragraphs address each of the above criteria in additional detail:

Targeting Recommendation: NEAT will not work in Mountain districts, or in areas not well connected by roads. It would be counter-productive for NEAT Component 3 to focus significant efforts on households that are not accessible by road that would not benefit much from commercial interventions that involved purchase of inputs sold in markets far from farmers' landholdings or sales to markets that cannot be reached through road networks.

Targeting Recommendation: NEAT Component 3 will seek to build synergies and market linkages between Hill and Terai districts according to the nearest road connections. In line with the approach mentioned above linking Hill and Terai districts, it would be best for the project to concentrate on districts that are closely proximate. Sometimes this will mean working in the same development region, and sometimes it will require working where road networks connect very poor districts to a neighboring development region. Rolpa and Python are linked more directly by road to markets in Western Region, than to markets in Midwest Region. This approach will facilitate transportation, management, and implementation of program activities.

Targeting Recommendation: NEAT will work in 10 Midwestern Terai and Hill districts due to high poverty levels in these areas and will thus reach a larger number of food insecure households. It will also work in 4 Western Hill and Terai districts with high poverty prevalence, large populations, and with road connections to Midwestern Hill districts. Achieving scale with limited time and resources will require focusing on a finite number of districts and building on opportunities existing within them. Thus, while almost all of the Midwest and Far West districts, and a few of the West districts could be classified as food deficit and vulnerable, NEAT will be unable to work in all of them and achieve the desired results. As the population of the Midwest region is slightly more poor and less food secure

than that of the Far West region, NEAT could extend its coverage to many more poor people, and improve livelihoods over a greater area by working in the Midwest Hill and Terai districts. In addition, by working in some districts within Western region, additional vulnerable beneficiaries can be reached. It should be noted also, that while these districts share many characteristics with Midwest region in terms of poverty and productivity constraints, they have traditionally been excluded from other USAID–funded food security initiatives. Therefore, it makes sense to include the proximate poor Western districts of Arghakhachi, Gulmi, Palpa, and Kapilvastu, with road connections to Pyuthan and Rolpa. Hence, some support to these districts via NEAT could make quite a difference.

Targeting Recommendation: Opportunities to leverage strategic synergies between Components II and III will entail geographic coordination in Midwestern and Western Districts between these components. This approach will support Component II and III activities to be based near to one another for ease of management and efficiency, but also to provide programmatic synergies through linking Component III producers with value chains developed and supported with the support of Component II. In many cases, it is only through the establishment of a solid market framework that poor small holders can begin to enter formal markets and build their earnings. The outcome of such a synergy between Components II and III will be more poor farmers linked to markets, and more products entering value chains.

B. Village Development Committee Selection

Village Development Committees (VDC) are selected based on vulnerability and programmatic criteria. All selected districts in this project contain a large number of vulnerable populations – including Dalits and indigenous groups – which frequently face high-levels of discrimination.

Information on food security at the VDC level is not readily available. However, the World Food Programme (WFP) utilizes seven Disadvantage Group (DAG) Mapping Indicators to assess the level of VDC vulnerability in Nepal. In order to rank VDCs on the basis of their level of food insecurity and vulnerability, we utilized the three most relevant indicators: I. Households with food sufficiency less than three months; II. Concentration of marginalized households; and VII. Prevalence of vulnerable households. For each of these indicators, a score was assigned ranging from 1 to 4 (with 4 being most vulnerable, and 1 being least vulnerable). The prospective VDCs were then further ranked using this method in order to develop three score ranges to determine VDC ranking. Those VDCs with a total score from 11-12 were ranked Highly Vulnerable. Those with a score of 8-10 were ranked Moderately Vulnerable. If scores for the three indicators totaled less than 8, the districts were ranked Less Vulnerable. Accessibility to roads was another consideration in the VDC selection.

SECTION III ANALYSIS OF FOOD SECURITY IN TARGET REGIONS

In February, 2011, a NEAT assessment team comprised of food security experts made a five-day visit to districts in the Midwestern Hill and Terai ecological zones to speak with households, communities, and cooperatives about their current food security status, the constraints they experience in trying to improve their food security, coping mechanisms they utilize to overcome food insecurity, and limitations related to gender, diversity, and other disadvantaged groups. The following analysis stems from this assessment and a review of secondary data sources.

A. Availability

In terms of food availability, Nepal has great difficulties, but also great potential in certain geographic regions and sectors. The evidence points to greater availability in the Terai, slightly less in the Hills, and much less in Mountain districts. With regard to Development Regions, the Midwest and Far West Hill, the Mountain Regions, and certain districts in the Western Region are impacted more severely than other parts of the country as a result of rainfall deficit and overall poor productivity. Hill districts have a greater potential to expand production through irrigation if capacity and resources can be built and brought to scale. Access to roads and markets appears to be most limited in the Midwest. In addition, availability of electricity that can support expansion of irrigation is least available in Midwest and Far West regions, while also being less available in Mountain areas. Thus, with respect to food availability, the geographic areas experiencing the greatest challenges are in the Midwest and Far West Hill and Mountain districts. However, overall market integration, increased availability of inputs, and expansion of infrastructure could result in significant improvements in these areas.

The fairly high level of productivity in the Terai is primarily due to the many hectares of arable land that are relatively fertile and accessible compared to land in the Hill and Mountain regions. While the availability of quality inputs such as seeds and fertilizer is limited, farmers in the Terai are more likely to access them due to a very extensive road network that does not exist in Hill and Mountain regions. Access to input and output markets in the Terai is also much better.

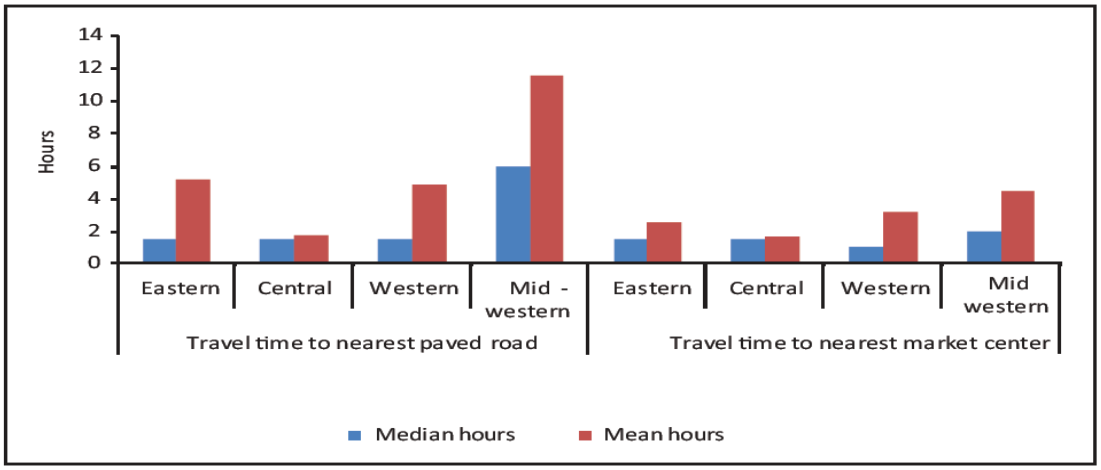
For our purposes, the high levels of surplus produced in the Terai offers two opportunities. First, surplus grain – especially paddy and other food products – can be traded with Hill and Mountain districts when and if they are accessible by road. If residents in those areas can mobilize adequate purchasing resources, food from the Terai can find a ready market in the Hill and Mountain districts. In many cases there are no road connections, especially into the Mountain districts. Recent efforts to build these connections are being developed at a rapid rate, but many roads are not yet complete. This makes it difficult to include many Mountain districts, and even some Hill areas, in activities that must involve interdependent market connections with the Terai.

Infrastructure

Another indicator of the capacity to develop agricultural production is the availability of infrastructure, including roads, irrigation and electricity. As noted previously, the lack of roads in Nepal cuts off producers from both input and output markets, particularly in the Hill and Mountain districts. Of the 75 districts in Nepal, nine districts and 11 district headquarters

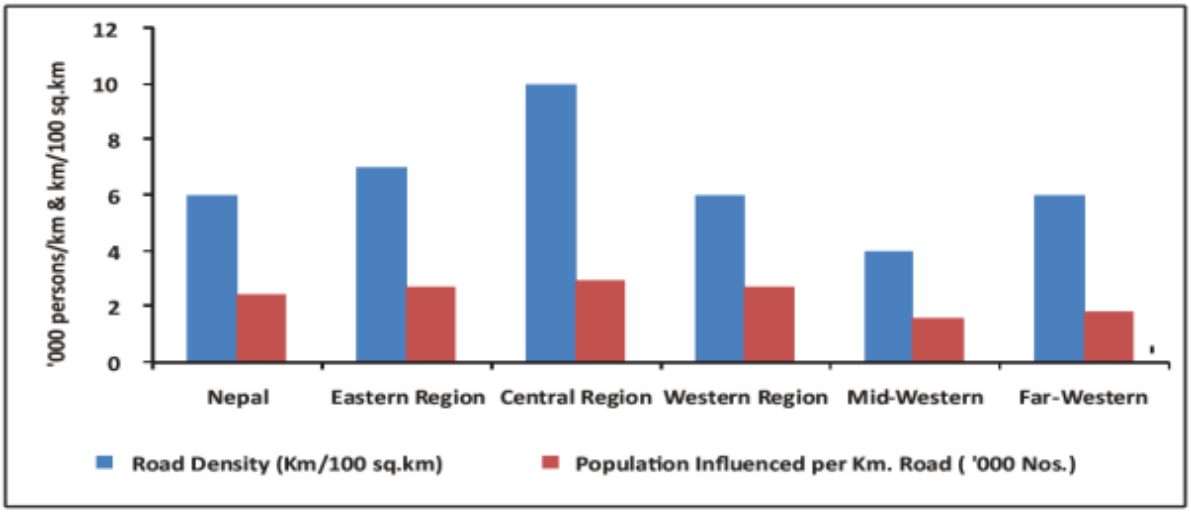
have not been connected by road.[3] Based on the table below, access to paved roads and markets is most limited in the Midwestern Region, although similar difficulties exist in other regions.

Figure 2: Travel Time Between Regions



Source: CBS, 2005.
From EFNSN, p. 104

Figure 3: Road Density Across Regions

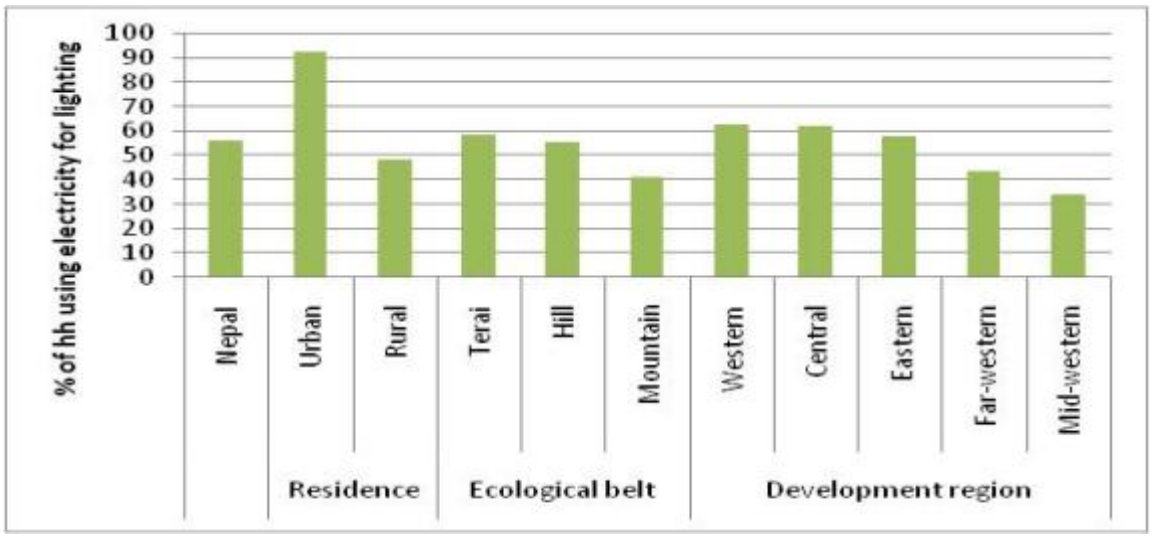


Source: DoR, 2008
From FNSN, p. 55

Access to electricity is also significant in that it enables use of electric pumps for irrigation, as well as other technology. A number of community-based hydropower projects currently show promise.[4] While no electric system in Nepal (even in cities) functions 100 percent of the time, some areas currently have greater access than others. Rural areas have far less access than urban areas, and Terai and Hill areas have more access than Mountain areas. Midwest and Far West Regions have less access than West, Central, and Eastern Regions.

[3] Ibid. p. 37
[4] EFNSN, p. 38

Figure 4: Infrastructure: Access to Electricity (2008)



Source: CBS, From; IFPRI PowerPoint, January, 2011

B. Access

With regard to ecological regions, the Hill regions appear to host the highest numbers of poor people. If cultivatable land holdings per capita are taken into consideration as an indicator of poverty, then the Hill and Terai ecological regions are more disadvantaged than the Mountain regions, although the productivity of land in Hills and Mountains is far lower than in the Terai. The underlying causes of poor food access in the Hill districts are based, to a great extent, on poor food availability related to low productivity. In the Terai, on the other hand, the underlying causes of food insecurity relate more to poverty than in the other ecological regions. Sufficient food is produced, yet a large portion of the population is poor, vulnerable, and often faced with wide-scale food insecurity after major flooding destroys crops (which occurs in the Terai every two to three years).

The overall poverty level among rural populations in Nepal is 34.6 percent. While some regions may not be poor overall, several districts within them exhibit greater poverty prevalence than others within the same region. For instance, the Western region is not particularly poor overall. However, there are several districts within the region that are more similar in their poverty profile to neighboring Midwest region than to the rest of Western district. These include the Western Hill districts of Arghakhachi, Palpa, Gulmi, and the Western Terai district of Kapilvastu. The table below shows that poverty levels in some Western districts may be more comparable to districts in the Midwest region than suggested by region-wide data for Western district. Also, as these districts are highly populated, a very high number of poor people reside there.

Figure 5: Poverty in Western Region Border Districts

District	Population ('000)	Human Poverty Index	Economic Empowerment Index	Poverty % (WFP)	% Marginal HHs	Ave. Farm size (ha)
Kapilvastu	481,976	48.5	0.361	40	22.1	1.25
Palpa	297,246	33	0.28	50	29	0.65
Gulmi	297,316	39.4	0.217	60	37.1	0.73
Arghakhanch	209,034	40.5	0.254	70	53.9	0.48

Source: WFP

Figure 6: Share of Average Monthly Household Expenditure, by Region (Percent) 2005/06

Food Item	Residence			Ecological Region			Urban Mkt Centre (KBL)
	Rural	Urban	Nepal	*Terai*	Hills	Mountain	
Grains & Cereal	32.4	29.5	30.7	30.5	30.6	33.3	29.4
Legume Varieties	4.3	4.1	4.2	4.7	3.9	4.1	3.7
Vegetables & Fruits	15.5	17.7	16.8	16.7	17.2	14.5	18.3
Livestock & Fisheries	19.3	19.2	19.2	19.2	19.1	20.5	17.5
Others	28.4	29.4	29.0	28.9	29.2	27.7	31.1
Food & Beverages to total Exp.	44.1	35.8	38.9	38.6	38.3	47.5	35.2

Source: NRB, 2008.

From EFNSN, p.51

The chart above shows that the proportion of expenditures on all foods is highest in rural areas and in the mountains. In the Hill and Terai regions, the proportion of income spent on food still exceeds one-third of the household budget, which is relatively high. Although poverty levels (as indicated by the proportion of income spent on food) are higher in the Mountain regions, they remain high in both the Hills and Terai.

While productivity of land in Hill districts is higher than in the mountains, and land productivity in the Terai is far higher than both of the other ecological regions, the number of people depending on that productivity is also extremely high. However, a large amount of what is produced is sold on the market, thus there is not a direct relationship between quantities produced and quantities consumed. While the percentage of people living in the Terai who are poor has decreased, the overall proportion of Nepal's poor living in the Terai has increased due to the growing population there. Thus, while the Terai districts produce food surpluses, many Terai residents – particularly landless farmers or those with small landholdings – are poor and have difficulties purchasing sufficient food for their households.

Figure 7: Poverty Headcount (Percent) and Distribution of Poor Population (Percent), Nepal

Region	Sub-region	Poverty headcount (%)			Distribution of the poor population (%)		
		1995-96	2003-04	% Change	1995-96	2003-04	% Change
Nepal		41.8	30.8	-26	100	100	-
Residence	Urban	21.6	9.6	-56	3.6	4.7	30
	Rural	43.3	34.6	-20	96.4	95.3	-1
Ecological belts	Mountain	57	32.6	-43	10.7	7.5	-30
	Hill	40.7	34.5	-15	41.9	47.1	13
	Terai	40.3	27.6	-32	47.4	45.4	-4

Source: CBS, 2005

From EFNSN, p. 44

This is very much the case in Terai VDCs that are impacted by floods, according to a WFP monitor. In these areas, many small farmers lease land from large landowners. In addition, in some very productive districts, large numbers of small landless leaseholders are dependent on farming small tracts on huge farms. For instance, the average land holding in Kapilvastu district in Western region is 1.25 Hectares. However, poor laborers, generally made up of lower casts and indigenous people, work this land. These workers depend on small wages and are at the mercy of many hazards that can cause crop failure, food price spikes or crippling dept.

A different pattern takes place among households in Hill districts. These households depend to a great extent on food purchases in order to meet their food needs through much of the year. A women's self-reliant group in a village in Salyan stated that they needed to buy staple food for anywhere from 10 to 12 months out of the year. Members of the women's focus group in Surkhet said they needed to purchase food for at least six months out of the year. At the same time, respondents to a household survey in Dailekh needed to depend on food purchases for seven months out of the year. These households engaged in a number of income generating activities, including conducting agricultural sales and casual wage labor (both agricultural and non-agricultural). Thus, these households depend significantly on the market to fulfill their household food requirements, even though they produce food for much of the year.

Diversity Considerations

Certain groups are more likely to be excluded from the benefits of the poverty reduction efforts of recent years, and this has a significant negative impact on food access. In particular, these groups include Dalits and Janjatis.

Dalits have largely been marginalized and excluded from development interventions. In some cases, agricultural production activities have pushed them farther away from the rest of the community by working with and promoting higher-caste and literate beneficiaries who own sufficient land. Beneficiaries in these projects tend to be richer, thus creating bigger gaps between the rich and the poor and between the Dalits and other castes. From a household survey conducted in Dailekh by our assessment team, we learned that a Dalit family has only recently been integrated into a village cooperative. According to a WFP monitor, the caste system continues to influence the social structure in many parts of Dailekh, a Midwestern Hill district. However, in Dailekh, 21 percent of the population is made up of various Hill Dalits (Kami, Sarki, Dholi/Damai), and another 9 percent are Magars, who are indigenous

Janjatis. Thus, nearly one-third of the population consists of groups that may experience some level of social and economic exclusion, and hence limited food access.

Gender Considerations

Women also face social exclusion and limitations with regard to participation in agriculture. Some major constraints include the fact that women contribute most of the agricultural labor but do not participate in most decisions related to crop and livestock production. In addition, women are not able to own land and cannot mortgage their land to take loans. If she is widowed, a woman cannot take ownership of her husband's land until her son reaches adulthood. These limitations reduce women's access to credit and leave them with little power to make decisions in the absence of their husbands. As many men migrate to find paid work, women are often unable to make decisions about essential farming activities during the time their husbands are not present. Women-friendly approaches in communication, linkages, mobilization, and technology need to be further developed.

Female workers in agriculture and the labor force as a whole are a critical target group for interventions promoting both employment creation and agricultural dynamism. Gender-related interventions need to address the following three areas:

- Improve women's access to productive resources and services, such as land, credit and livelihood improvement services
- Empower women to voice their concerns and needs by claiming services and their rights to equality
- Ensure equitable participation and justice in the "rules of the game"[5]

The NEAT project seeks to improve access for women in target areas through a variety of avenues, which may include providing gender and diversity analysis in agriculture training to all NEAT staff in order to develop a common understanding about the need for gender and social inclusion. Additionally, NEAT could support women-friendly time and labor saving technology in irrigation and food processing (such as ginger) where farmers have adequate savings and capacity to invest in it. Ultimately, improving women's access can only be accomplished by engaging women in participation in the development-planning process.

C. Food Utilization or Absorption

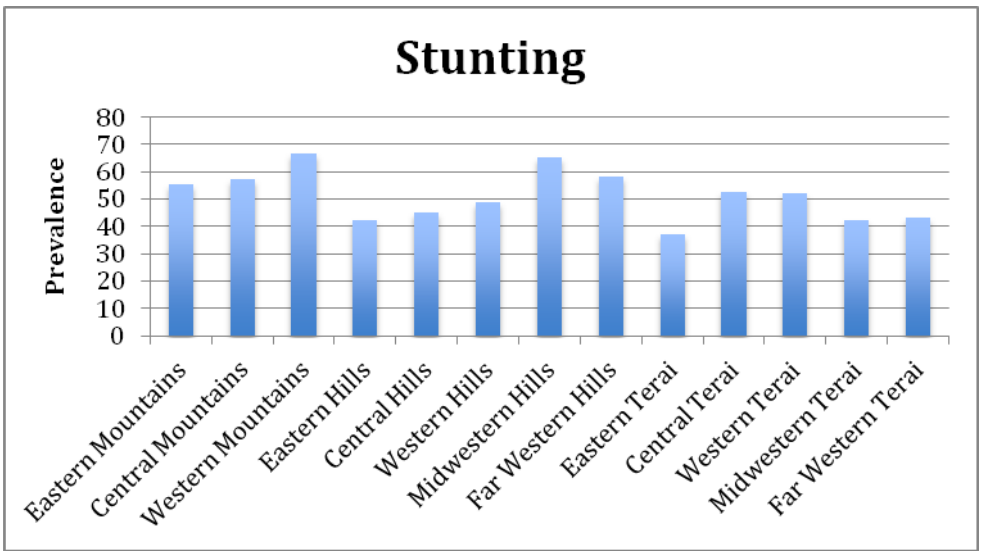
While proper food utilization depends to a great extent on the level of food availability and access, other factors also contribute. Bodies require adequate caloric consumption to ensure survival. However, they also require adequate supplies of micronutrients such as vitamins and minerals in order to develop adequately and maintain health.

Throughout rural and urban areas, ecological zones and development regions, stunting is the most prevalent type of malnutrition, followed by underweight and wasting.

Stunting, or low height for age, occurs if inadequate nutrients – both micronutrients and macronutrients – are not provided in adequate quantities to children from conception until the age of two. When children begin to consume food, they do not only need to consume enough food and satisfy caloric adequacy, but they need to consume a diverse diet consisting of a variety of foods including various vegetables, fruits, and foods providing animal-based proteins.

[5] Rebecca Holmes, ODI: Social exclusion: socio political, legal and policy perspectives

Figure 8: Prevalence of Stunting by Sub-Region



DHS, 2006, page 194

The districts in Nepal with the highest stunting prevalence are those in the Western Mountains. Districts in the Midwestern Hills have the highest stunting levels among Hill districts and have the second highest in prevalence in the country. Among Terai districts, stunting was most prevalent in the Central Terai, followed closely by Western Terai. As a number of these areas also have high poverty prevalence, there appears to be a credible link between poverty and stunting prevalence. The linkage between these two elements likely results from households not having adequate access to sufficient quality and quantity of food to ensure that all of the dietary needs of mothers and children, and, indeed, the entire household are met.

Wasting, or low weight for height, results from inadequate caloric in-take. While stunting takes two to three years to become established, wasting occurs in only a few weeks. While stunting only occurs prior to age two and cannot be reversed after that time, wasting can take place throughout life, but can only be reversed through therapeutic nutrition. Wasting is often referred to as "acute malnutrition" because it occurs quickly, has a severe impact on health and can result in death. Wasting tends to occur as a result of an immediate acute loss of access to food.

In accordance with the WHO criteria, the prevalence of wasting is above acceptable levels in all areas of Nepal except in the Central Hills. Among Mountain districts, the highest prevalence is in the Western Mountains. Wasting here is serious with a prevalence of 11.2 percent; and is poor in Central and Eastern Mountain districts. In all Hill districts other than the Central Hills, wasting is a problem. Wasting is poor in Western and Midwestern Hills, and alarming in the Far Western Hills at 15.7 percent. However, wasting is most prevalent in the Terai, and reaches levels generally only seen in emergency situations. The highest prevalence of wasting is in the Central Terai at 20.7 percent. The Far Western Terai at 19.6 percent and Midwestern Terai at 15.7 percent are also classified as "alarming" according to the WHO. The Eastern Terai is only slightly better at 13.8 percent, and would be classified as severe.

Underweight is a condition of low weight for age. This measurement tends to be used as an indicator of stunting and wasting which summarizes nutritional status overall for a geographic area. While stunting and wasting point to specific and distinct conditions, underweight gives a more general picture of nutritional status. This indicator is often used for comparative purposes or to measure changes in nutritional status over time. In order to ensure the greatest reduction in underweight, it is necessary to reduce stunting and/or wasting - that is, chronic malnutrition and poverty and/or acute malnutrition and vulnerability.

Overall, among mountain districts, the prevalence of stunting, wasting and underweight are highest in the Western mountains. Among the Hill districts, the Midwestern and Far Western Hill districts have the highest malnutrition prevalence. Among Terai districts, stunting, wasting, and underweight are all most elevated in the Central Terai. However, all Terai districts cope with severe or alarming wasting prevalence, according to this data.

SECTION IV SUBSECTOR SELECTION AND APPROACHES FOR COMPONENT 3

The general approach in Hill Districts will place emphasis on enhancing productivity as a first step to improving food availability and access. However, training will also focus on marketing so that farmers understand that production should not be limited to household use, and that in order to sustain their productivity, they need to ensure that a portion of their products reach the market. This will help ensure that farmers earn income in order to purchase inputs and meet other household needs, including food. In Terai districts, the focus is on marketing, although productivity and production issues will be addressed.

The types of crops produced in the Midwest and selected Western Hill districts will vary to some extent based on elevation and sloping of the land as well as rainfall. The Hills are less suited to crops that require significant rainfall, such as paddy. Thus Hill districts produce far less paddy than the Terai. However, most of the selected Hill districts produce significant amounts of maize, frequently exceeding the volumes produced in the Terai. Overall, however, grain production in the Hills is far lower than in the Terai.

Priority, alternate, and secondary sub-sectors are suggested – and will be open for review – to ensure priorities for project focus, options for farmers and opportunities for growth in later months of the project. The below table highlights our sub-sector priorities for Hill and Terai Districts. It is important to note that these priorities will help create synergies with other NEAT value chains in the West. *(Refer to Annex E for information regarding recommended approaches by sub-sector.)*

Figure 9: Sub-Sector Priorities for Hill and Terai Districts

TABLE: Sub-Sector Priorities for Hill and Terai Districts

	Paddy	Maize	Wheat	Vegetables	Lentils	Poultry	Ginger	Goats	Swine
Hills									
Terai									

	First Priority: • High current production • Market opportunities are good • Entry costs low, relatively easy to adopt • Production for consumption and sale • High project interest in promotion
	Alternative Options for First Priority: • Medium current production • Farmer prefers this to priority grain option • Entry costs low, relatively easy to adopt • Production for consumption and sales • Medium to high project interest in promotion
	Second Priority: • Medium current production • Market opportunities medium to good • Entry costs relatively high, medium to high difficulty to adopt • Requires irrigation • Low to medium project interest in promotion

SECTION V CONCLUSION

Findings

Regional Targeting

- Several geographic areas were identified as being affected by food insecurity based on inadequate food availability, food access, and food utilization: Midwest and Far West Mountain Regions, Midwest and Far West Hill Regions, Central Terai, and four Western Hill and Terai districts bordering on Midwest Region.
- In Mountain regions both poor productivity and lack of road connectivity are significant constraints to achieving food security. In these areas, unless major infrastructure improvements are made, achieving food security will depend on the use of safety nets, direct procurement of inputs, and resource-intensive transportation mechanisms (i.e. trekking, air travel).
- In Hill districts, food deficits resulting from poor productivity and lack of adequate market integration contribute significantly to poverty and poor food access, which in turn contribute to inadequate food consumption and poor nutritional status (especially stunting). In the Terai, productivity is high and food deficits are rare. However, poverty is prevalent and shocks – such as rapid-onset floods – result in high levels of vulnerability. Poverty reduces food access in these areas, and results in very high levels of acute malnutrition or wasting.
- The Hill and Mountain regions were found to be the most food deficit overall, although poverty levels in the Terai region often exceeded those in other ecological regions. The proportion of Hill district populations that are poor, however, was found to be highest.
- The Midwestern development region was found to have the highest poverty prevalence overall, and its districts host the highest numbers of poor people. Four Western Hill and Terai districts have a similar profile to Midwestern districts, yet are often overlooked because the rest of Western region overall does not appear as poor.
- Higher numbers of people are affected by poverty and stunting in Hill districts. Although the prevalence of stunting is slightly lower in Midwestern Hill districts (65.5 percent) then in the Western Mountain districts (66.8 percent), the number of children affected is much higher as the total population of the Midwest Hill districts is twice that of all Western Mountain districts combined.

Sub-Sectors and Approaches

Sub-Sectors

- In the Hill districts, opportunities exist to support products being produced in relatively high volumes, where market potential exists, yet are low input interventions within reach of poor and food insecure households. A primary focus will be on increasing production and productivity, yet farmers will be trained and oriented in marketing near the start of the project so that they can increase their earnings relatively quickly.
- In Terai districts, the focus will be on marketing, however productivity and production issues will be addressed. Priority, alternate, and secondary sub-sectors were defined to ensure project focus, options for farmers, and opportunities for growth in later months of the activity.

The priority constraints identified by farmers and stakeholders that were encountered both in the Terai and Hill districts visited were:

- Lack of availability of quality seeds, or inability to ensure the quality of seeds that are available.

- Chemical fertilizer is often available, but generally arrives too late to meet the needs of farmers.
- Climate change has resulted in the weather exhibiting unusual patterns, such as unseasonal warmth or cold, erratic or uneven rainfall, severe storms – including hailstorms in some hill districts, drought conditions, or extreme flooding in the Terai.
- Lack of access to new or improved technologies by farmers, especially small-scale irrigation technology.
- Inadequate crop storage reducing yields by at least 20-25 percent.

Suggested Sub-Sectors

- Hill Districts:
    - Priority: Maize (with paddy and wheat alternate options), Vegetables, and Poultry
    - Secondary: Ginger and Goats or Swine
- Terai Districts
    - Priority: Paddy (with maize and wheat alternate options), Lentils, and Vegetables
    - Secondary: Goats or swine

VDC Selection

- All districts selected meet various food security criteria, and contain a high number of vulnerable populations, including Dalits and indigenous groups, many of which are discriminated against
- Reviewing the selected districts, many of them have pockets of poor and vulnerable populations, but not all of them are connected by road, or hold potential to support sub-sectoral opportunities.
- VDCs will be selected based on both vulnerability and programmatic criteria.

Gender and Diversity

Efforts to integrate women and diverse groups into development programs face the following constraints that should be taken into account during NEAT implementation:

- Inadequacy of disaggregated data: A lack of disaggregated data about women and diversity groups prevails at the institutional level.
- Land ownership: Nepalese women are discriminated against with regard to land ownership, and when claiming equal rights to parental property.
- Access to credit: Nepalese women do not possess an equal legal status with respect to mortgaging land to obtain formal credit for productive purposes.
- Appropriate and Adequate extension services: This situation also applies with regard to the hiring of women, Dalits and various ethnic caste groups to conduct agricultural extension services.
- Access to agricultural inputs: With the promotion of hybrid varieties of seeds, chemical fertilizers, and pesticides, women farmers, who have been doing most of the agricultural activities so far, find it difficult to adjust completely to new agricultural production processes.
- Lower rate of female literacy: The women's literacy rate in Nepal in 2001 was 34.9% versus 62.7% for men.

ANNEX A: STUDY METHODOLOGY

1. Secondary Sources Consulted: This study analyzes existing food security and vulnerability data derived from a number of secondary sources.

Some sources provided fact-based quantitative data that was largely used to assess the relative degree of food insecurity of a region or district. This data was analyzed in order to prioritize regions, districts and VDCs. Data on crop and livestock production was reviewed as well as information regarding poverty. As the focus was on use of food security criteria, the main emphasis was on availability and access criteria. Nonetheless, nutrition data was also reviewed, particularly prevalence of stunting, wasting, and underweight. These data were referenced as a means of indicating the degree of chronic, acute, or generalized food insecurity. Vulnerability data was also reviewed as it related to exposure to shocks and lack of accessibility. Data on ethnic make-up of districts was also used.

Data sources for this information were as follows:

- Crop and livestock production: WFP, Crop and Food Security Assessment (CFSA) 2009-2010, Nepal Central Bureau of Statistics (CBS), District and VDC Profile of Nepal – 2010
- Poverty and food access: WFP, The Food Security Atlas of Nepal (FSAN), NeKSAP, Various food security monitoring report updates
- Nutritional data: Demographic Health Survey (DHS), 2006, MACRO International
- Vulnerability data: WFP Food Security Monitoring System, 2010-2011
- Other demographic data: CBS, 2011[6]

In addition to the quantitative sources, a number of analytical sources were utilized. These included reviews conducted by experts from government, NGOs, and research institutions that presented some additional fact based data, but also analyzed some of the same data referenced above. The perspectives of experts with significant experience working in the country was particularly helpful in teasing out important nuances in the data that go beyond simple assumptions regarding food insecurity.

Analytical data sources were as follows:

- FSAN
- NeKSAP reports
- USAID Nepal, IIDS, and IFPRI, Ensuring Food and Nutritional Security in Nepal (EFNSN), September 2010
- Various other WFP and NeKSAP reports

Finally, making use of the experiences of other practitioners was key to the findings of this study. Practitioners among the NEAT partners that included staff of Fintrac, CEAPRED, and WOCAN contributed significantly to an understanding of issues and approaches that have worked in the past and could work in the future. In addition, WFP officials and monitors were extremely helpful in sharing their understanding of the conditions in various districts of Nepal. Finally, some Ministry of Agriculture and Cooperatives (MOAC) and District Agriculture Development Office (DADO) staff took time out to meet with us and discuss various issues related to food security in their areas. These specialists who have long

[6] The last available census data is from 2001. A nationwide census is due to be conducted in 2011.

experience provided a more "experience based" understanding of what the level of vulnerability was in some areas and why these problems existed. A list of individuals consulted is provided as Appendix A.

2. Limited Field Study: A team consisting of a Land O'Lakes short-term Food Security Technical Specialist, Land O'Lakes Food Security Consultant, NEAT Gender Specialist, and NEAT Food Security Manager made a five-day visit to Midwestern Hill and Terai districts to gain a perspective from households, communities, and cooperatives regarding their current food security status, the constraints they experience in trying to improve their food security, ways they have tried to cope with or overcome food insecurity, and constraints related to gender, diversity, and other disadvantages. During the visit data collection tools, including a Focus Group Discussion (FGD) format, and household survey were pilot tested for use during the Phase II Household Baseline Survey. In conducting these preliminary surveys, the team collected valuable information from three focus groups (two women's focus groups and one men's focus group), and two households. These were conducted in three communities in three different districts (Salyan, Surkhet, and Dailekh). In addition, the group met with a wide variety of cooperatives and groups of farmers, and officials (see schedule of activities below). While the information provided by these groups should be treated as anecdotal, talking with these individuals and groups was helpful in contextualizing the data in terms of how and why food insecurity impacts their lives, some of the underlying causes of food insecurity, and most importantly, which approaches have been successful or unsuccessful in improving household food security and livelihoods.

TABLE: Field Visit Schedule

Date	Location	Group/Persons Met	Type of Meeting
3 Feb '11	Nepulgunj	Nepalgunj Chamber of Commerce and Industry	Key Informant interview
		Nepalgunj Agricultural Quarantine Office	Key Informant interview
4 Feb '11	Kapurkot, Salyan	Nepal Ginger Research Program	Key informant interview
	Salyan	Women's Self-Reliance Group	Focus Group Discussion
		Meeting With Dairy Cooperative	Key informant interview
5 Feb '11	Ghorahi, Dang	Meeting with DADO Personnel	Key Informant interview
	Harre, Surkhet	Meeting with Vegetable Cooperative	Key Informant interview
		Men Cooperative Members	Focus Group Discussion
		Women Cooperative Members	Focus Group Discussion
	Surkhet Municipality	Agro-Vet Dealer	Key Informant interview
6 Feb '11	Gurase, Dailekh	Meeting with Cooperative	Key Informant interview
		Meeting with Household	Household Survey Pilot Test
		Meeting with Household	Household Survey Pilot Test
	Surkhet Municipality	Meeting with DADO Personnel	Key Informant interview
		Meeting with Women's Water Group	Key Informant interview
7 Feb '11	Banke	Meeting with Multi-Purpose Cooperative	Key Informant interview
	Nepulgunj	Meeting with Dairy Cooperative	Key Informant interview
		Meeting with WFP Monitor	Key Informant interview

Wherever possible various data sources were triangulated so as to ensure data verification. Geographic and Sub-Sector decisions were made based both on available data and strategic considerations. In some cases, where poverty data indicated that regions were relatively comparable in terms of food security indicators, programmatic, resource, and strategic considerations were used for decision-making.

3. Data Limitations: Much of the data used to compile this report was not current due to a number of issues: (1) the last Census was ten years ago, and was not repeated last year as planned; any population figures have been extrapolated from 2001 levels and are based on a projected annual growth rate of 2.1 percent; (2) up-to-date data from NeKSAP was two years old and had not been up-dated; (3) much of the detailed data regarding food production, poverty levels and nutrition were pulled from resources that referenced primary data sources that were several years old; and (4) the most recent Joint Crop Assessment by WFP, FAO, and MOAC referenced in this report was from 2009/10, although a new assessment was underway at the time of this writing, but could not be used because the release date was the same as the completion date of this study. While these limitations are of concern, the available data are mostly sufficient for strategic-level decision-making. We anticipate validation and extension of these data in the process of preparation for and conduct of the Phase II baseline study.

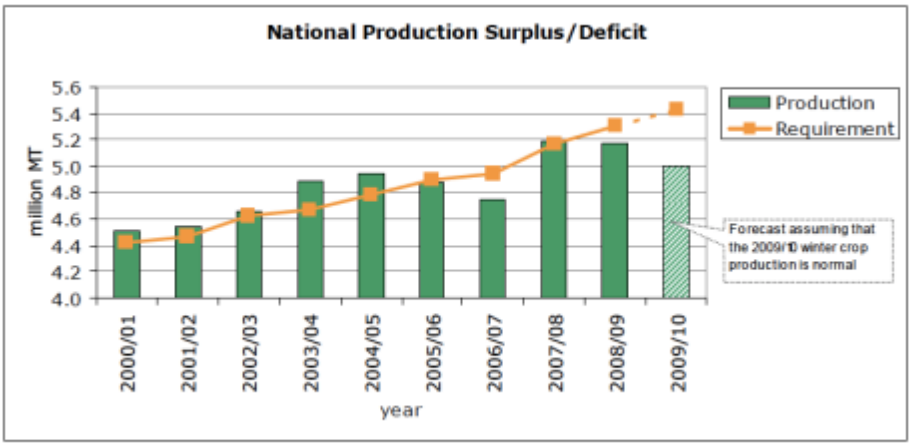
ANNEX B: ADDITIONAL NATIONAL-LEVEL FOOD INSECURITY DATA

1. Food Availability

Overall, Nepal is currently experiencing a cereal deficit based on the caloric needs of its population, and its dependency on imports has reached more than 3.5 percent (based on a ratio of imports versus exports). In general, cereal production has barely kept pace with population growth. It has either been slightly positive or negative during the past decade. Agricultural output growth is weak compared to neighboring South Asia countries, and the rate of growth has slowed in recent years. However, deficits have impacted certain areas of the country more than others. For instance, the Hill and Mountain regions are more likely to be deficit and are more vulnerable to fluctuations in rainfall.

Figure

CHART 3: NATIONAL EDIBLE CEREAL PRODUCTION SURPLUS/DEFICIT



Source: MOAC

From MOAC, WFP, FAO, Summer Crop Nepal 2009/2010, Crop and Food Security Update, Joint Assessment, February 2010, page 13.

Of the factors that limit productivity, lack of access to irrigation, lack of availability and access to quality seeds (and quality control with regard to seeds available), and lack of fertilizer and other input use play key roles.

The greatest constraint mentioned in most of the literature and in focus groups and key informant interviews was lack of irrigation. Use of irrigation is limited with less than 32 percent of cultivated land area under irrigation[7], thus production levels are highly dependent on rainfall. Despite this situation there is significant potential to expand this, particularly in Hill districts [8] with only 49.5 percent of irrigable land having access to irrigation. In the Mountain area, irrigation is less possible, thus 83.8 percent of the irrigable land is covered by irrigation, while in the Terai, 74.4 percent of the irrigable land has been covered. Irrigation systems, which provide significant return, constitute a major investment for many rural farmers, and require significant skill to install. Both the resources and capacity to expand

[7] EFNSN, 2010, p. xix
[8] Ibid., p. 23

irrigation to reach its potential are currently lacking in Nepal, yet there is great scope and potential for expansion, especially in the Hill districts.[9]

Further, fertilizer use at 19.1 kg/HA is extremely low and has declined significantly during the past decade as most of the supply has started to be sold commercially. It is not clear why this is, except that the price has increased significantly in recent years. However, there is some indication that unofficial cross border trade in fertilizer is not captured and likely constitutes a significant portion of the fertilizer use in Nepal, particularly in the Terai near the Indian border. FAO and WFP have estimated that by 2002/03 approximately 80 percent of fertilizers entered Nepal illegally from India. In Hill districts visited, most farmers we spoke were using chemical fertilizer for vegetables they planned to sell because "otherwise we would not make any money". However, in many cases, due to their remoteness, fertilizer often did not arrive on a timely basis for the planting season. Nonetheless, some women farmers said they preferred to use manure for the vegetables they would eat at home. Average official fertilizer use is 19.1 kg/HA, which is far lower than any other country in South Asia except Bhutan (9.5 kg/HA)[10].

Seeds have largely been supplied through informal sources thereby reducing quality control. Focus group participants noted that the some of the seeds they purchase from Agro-Vets in their communities have failed, resulting in crop losses. One large Agro-Vet dealer who previously worked as an extensionist noted that he does his best to test commercial hybrid seeds (although he cannot test all of them), understand the planting and fertilizer requirements, and advise customers accordingly. While he was more knowledgeable than most Agro-Vet dealers, even he did not know everything about the hybrid seeds he was purchasing, mostly imported from Korea and Japan. It was also noted by officials at the Agricultural Quarantine Station near the Indian border in Nepalgunj that the open borders allowed farmers to smuggle small quantities of seeds into Nepal from India. However, once again, using these seeds could result in crop failures, or worse, in the spread of diseases. According to EFNSN, seeds from China also contribute significantly to vegetable yield increases. [11]

While the supply of inputs has been uneven, farmers' ability to access agricultural extension services is hampered by a system that has undergone numerous institutional changes during its sixty-year existence. Currently, crop extensionists are managed by the Department of Agriculture (DoA), and livestock extensionists are managed out of the Department of Livestock (DoL). This may be one source of this system's weakness. However, the system is also under-resourced, leading to inadequate coverage, and an inability for extensionists to address the needs of farmers as they arise. The system suffers from a lack of trained people to carry out extension, and notably, there are far fewer women than men, although women conduct at least half of all farm work. Extensionists work out of District Agricultural Development Offices (DADO) in each of the 75 districts. Each district operates 4 to 5 service centers that cover 2 to 4 VDCs. Below is a table that lists the average coverage of extensionists. Nonetheless, at the Dang District level DADO office the team as told that there were three extensionists, and each needed to cover 10,000 farmers in this densely populated Terai district. Under such circumstances, it is difficult to know what priorities to address first. While training of leader farmers or community based livestock workers may help to some extent to bridge the gap, the lack of personnel would make training enough of

[9] Ibid.
[10] Ibid, p. 25
[11] Ibid, p. 24

these volunteers difficult. Meanwhile, many NGOs (including CEAPRED) act to supplement government extension services.

TABLE: Extension coverage of Department of Agriculture and Department of Livestock

Items	DOA		DLS	
	2007	2001	2007	2001
VDC per JT, JTA	2.54	2.15	2.70	2.47
Households per JT, JTA	3204	2713	3417	2893
Cropped Area (ha) per JT, JTA	2606	2166	NA	NA
Livestock Unit per JT, JTA	NA	NA	7161	6177

Source: Chapagain (2010). Note: JT stands for junior technician and JTA for junior technical assistant.

From EFNSN, p. 30

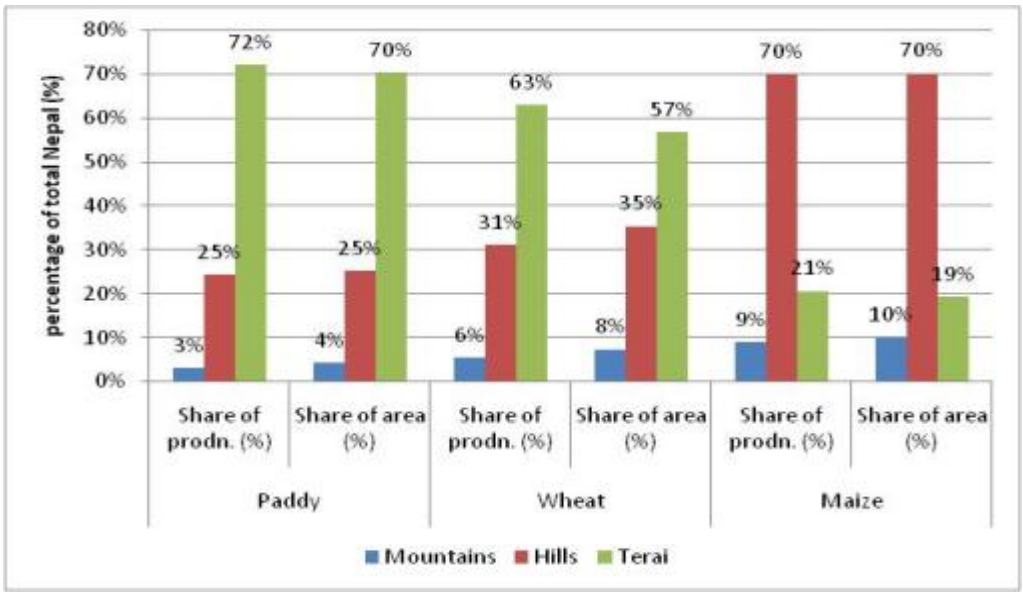
Several factors influence geographic availability within regions, districts, VDCs, or villages in Nepal. Due to the variations in Nepal's terrain, access to markets may be limited by lack of road access. As noted, most production in Nepal is rain fed due to limited irrigation access. In 2009, the late start of the monsoon season and irregular distribution of rain caused a reduction in summer crop production. As a result, paddy production was reduced by 11 percent and maize production was 4 percent less than in 2008/2009. It should be noted that Midwest and Far West Hill and Mountain districts were hardest hit during this period, with deficits ranging from 50-70 percent in some places. The lack of grain production in such regions can be cause for concern as road and market accessibility can be extremely poor. This is because the amount of food reaching these areas from other parts of the country is limited, and the costs to transport it are high[12].

It is not simply the difficulty of moving food into the Hill and Mountain districts that limits food supplies to markets and increases prices. Nepal is highly dependent on imports from India. Since October 2007, India imposed various restrictions on its rice exports due to its crop loss situation. Paddy prices and supplies on both sides of the border were impacted. Higher prices and crop failures in high producing countries such India, Vietnam, Pakistan and Philippines also have an impact on availability in Nepal.[13]

For the most part, Hill and Mountain regions tend to be less productive than the Terai, although Hill regions surpass the Terai in cultivation and production of maize (see chart below). While levels of production do not necessarily dictate degree of household access to food, there is certainly a relationship in Nepal. This is due in part to the factors mentioned above that limit movements of food from deficit to surplus areas. Markets are not well integrated, and food does not flow well between many of the regions. This is especially the case within the Hill and Mountain regions that must depend, to a great extent, on their own productivity.

[12] MOAC/WFP, Crop and Food Security Assessment, 2009/10, p. 4
13 Ibid

FIGURE: Variation across regions in cereals (TE 2006-07)



Source: MOAC
From EFNSN, p. 4

The relatively high level of productivity in the Terai is primarily due to the many hectares of arable land that are relatively fertile and accessible compared to land in the Hill and Mountain regions. Rainfall amounts are higher, although this can be a hazard in flood years. As level fields are less plentiful in Hill and Mountain regions, it is often necessary for farmers to build terraces on sloped areas. The proportion of land that is irrigated is also higher in the Terai, although many areas remain rainfed. While access to quality inputs such as seeds and fertilizer is limited, farmers in the Terai are more likely to access them due to a very extensive road network that does not exist in Hill and Mountain regions. Access to input and output markets in the Terai is also much better. Finally, access to credit tends to be better in the Terai than in many Hill and all Mountain districts as more credit providers tend to locate there. The exception to this rule is, of course, Kathmandu, which is situated in the Central Hill Region[14].

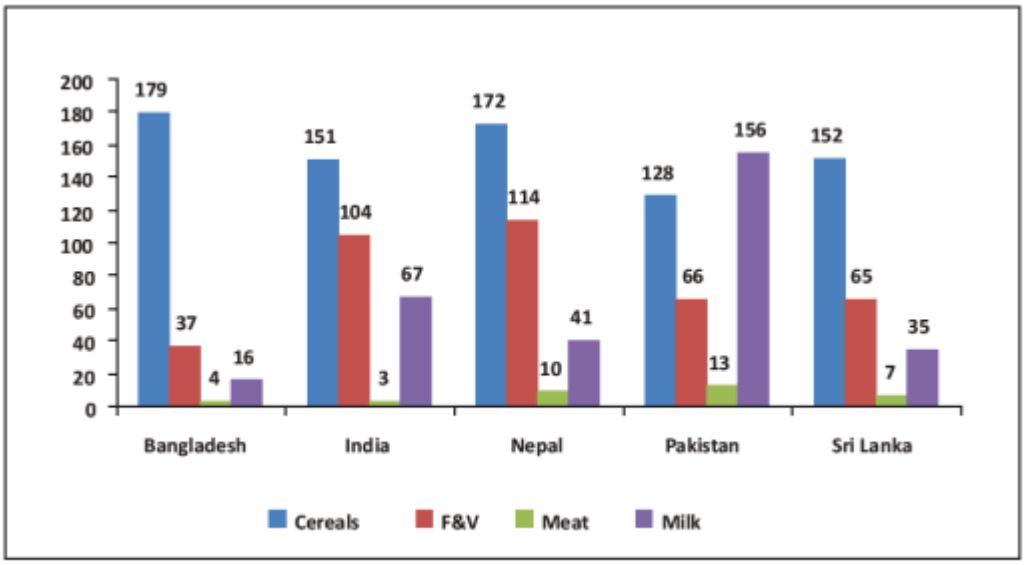
The high levels of surplus produced in the Terai offers two opportunities. First, surplus grain – especially paddy, and other food products can be traded with Hill and Mountain districts when and if they are accessible by road, and if residents of those areas can mobilize adequate resources to purchase that food, then food from the Terai can find a ready market in the Hill and Mountain districts. Of course, the cost of taking food to areas that are difficult to access is high. Hill and Mountain residents must have sufficient resources (assets, income, and savings) to purchase that food, or they must obtain subsidy support (see section on Food Access).

Of course, in many cases there are no road connections, especially into the Mountain districts. Recent efforts to build these connections are being developed at a rapid rate, but many roads planned are not yet completed. This makes it difficult to include many Mountain

[14] Food Security Monitoring Network/WFP/Nepal Development Research Institute, The Food Security Atlas of Nepal, July 2010, p. 9

regions, and even some Hill areas, in these interdependent arrangements, increasing the needs to develop more road linkages to connect many of these areas.

FIGURE: Per capita availability of cereals, fruits & vegetables (F&V), meat products and milk in South Asian countries (kg/capita/year) (TE 2007)



Source: FAO, 2009. Note: Corresponding figures were unavailable for Bhutan.

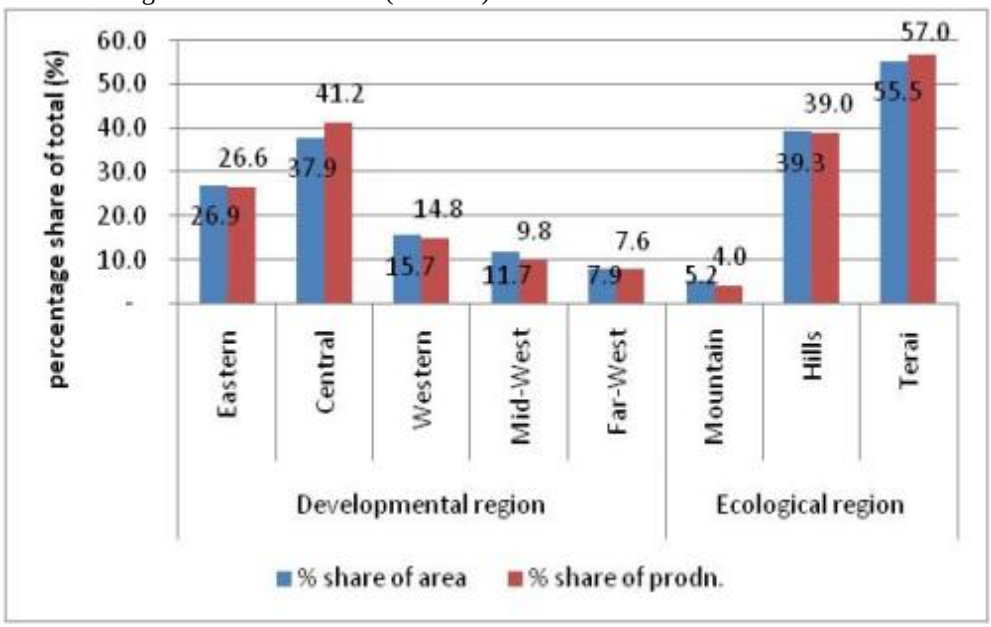
From EFNSN, page 5.

Nepal ranks highest among South Asian countries in with regard to production of fruits and vegetables, with production levels at 114 kg/capita/per year.[15] Nepal also produces the second-highest amount of grain and meat per capita, while its dairy production level fall somewhere in the middle. While these production levels show promise with regard to Nepal's food self-sufficiency, there are still issues of food access, utilization, and vulnerability that limit the current positive impact of these figures. Nonetheless the potential for growth in high value sectors appears relatively good overall.

As indicated above with respect to paddy and grain production, fruit and vegetable productivity is not high throughout the country. The share of fruit and vegetable production is highest in East and Central Regions and lowest in West, Midwest and Far West Regions; it is highest in the Hills and Terai, and lowest in Mountain districts. While this shows a somewhat promising situation for certain areas of the country in terms of dietary diversification, and market and value chain options, the differences among regions point to an uneven distribution of this potential. This is similar in nature to the situation with staple crop production noted above.

[15] EFNSN, p. xix

FIGURE: Regional Share in F & V (2008/09)



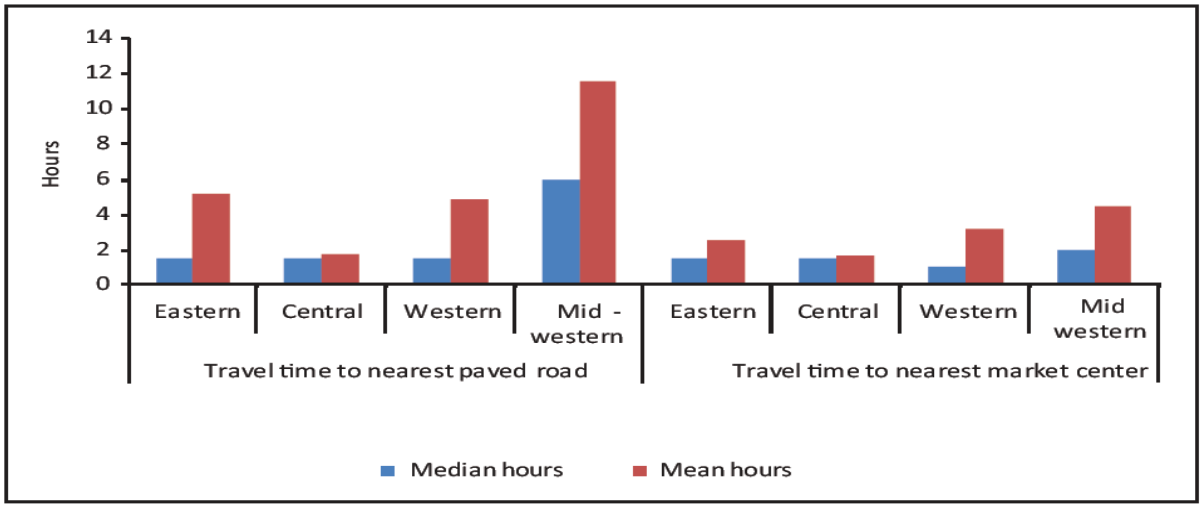
Source: MOAC
From: IFPRI Presentation, January 2011

While productivity appears to be high, it is not known how much product enters markets. There is little data available regarding marketable surpluses for many crops, although available information suggests surpluses of 21 percent for paddy, 26 percent for wheat, 34 percent for potatoes, and 43 percent for vegetables[16]. However, it is difficult to know how much of these surpluses are sold and how much income is earned from their sales. Little is known about the size of post harvest losses, and the degree to which grading takes place.[17] Some focus groups and individuals noted losses of vegetables, potatoes, and other crops of up to 50 percent. While one women's group was earning more money by grading their vegetables, another group informed the team that while they had tried grading, they found that while it worked initially, prices eventually became the same regardless of the grade, so they abandoned the practice.

Another indicator of capacity to develop agricultural production is the availability of infrastructure, including roads, irrigation, and electricity. As noted above, the lack of roads in Nepal cuts off producers from both input and output markets, particularly in the Hill and Mountain districts. In many cases, districts and VDCs are cut off for periods of time during the year. Of the 75 districts in Nepal, 9 districts and 11 district headquarters have not been connected by road.[18] Nonetheless, road-building efforts are continuous and many are supported through WFP Cash for Work programs. Based on the table below, access to paved roads and markets is most limited in Midwestern Region, although similar difficulties exist in other regions.

[16] EFNSN, p. 32
[17] Ibid. p. 33
[18] Ibid. p. 37

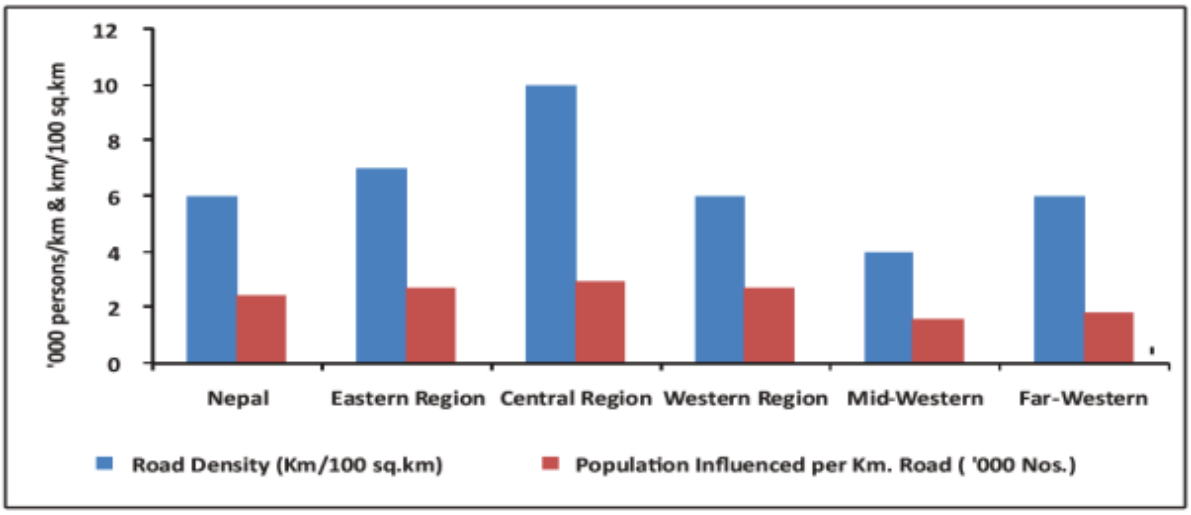
FIGURE: Travel time from various regions



Source: CBS, 2005.

From EFNSN, p. 104

FIGURE: Road density across regions



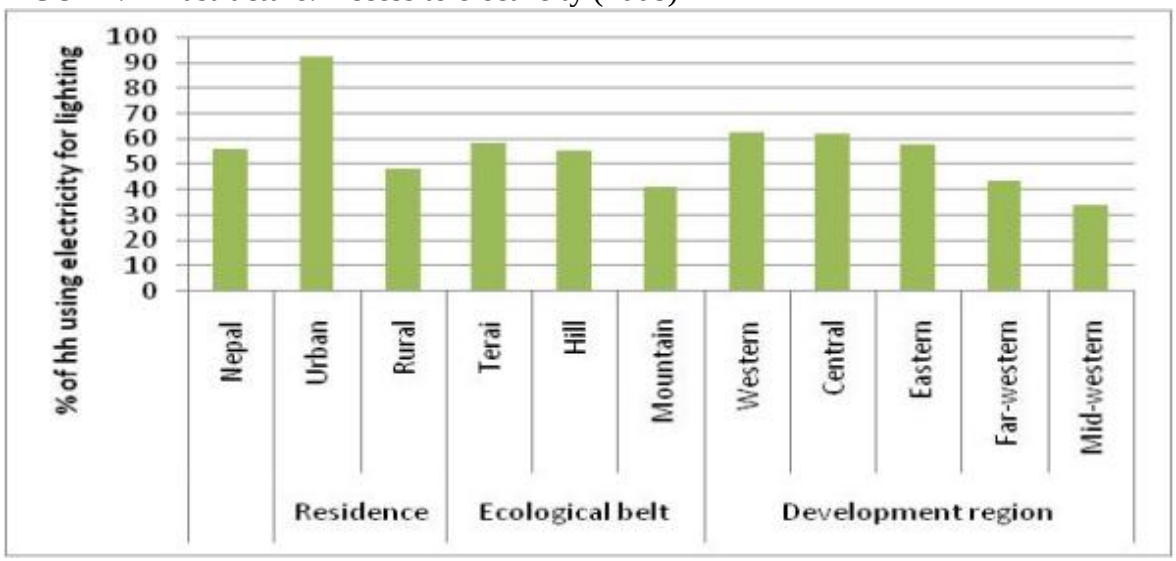
Source: DoR, 2008

From FNSN, p. 55

Access to electricity is also significant in that it enables use of electric pumps for irrigation, as well as other technology. A number of community-based hydropower projects currently show promise.[19] While no electric system in Nepal (even in cities) functions 100 percent of the time (load sharing requirements result in scheduled power outages), some areas currently have greater access than others. Rural areas have far less access than urban areas, and Terai and Hill areas have more access than Mountain areas. Midwest and Far West Regions have less access than West, Central, and Eastern Regions.

[19] EFNSN, p. 38

FIGURE: Infrastructure: Access to electricity (2008)



Source: CBS, From; IFPRI PowerPoint, January, 2011

2. Food Access

While poverty levels in Nepal remain high, the country has nonetheless seen the highest rate of poverty reduction among South Asian countries with a rate of 3.7 percent per annum between 1996-2004, with a 1.4 percent per annum percentage point reduction. On the other hand, per capita GDP rose at a rate of less than 14 percent, which was much slower rate than in Bangladesh (37 percent) or Pakistan (22 percent). Nepal's income levels are, in fact, by far the lowest among South Asian countries.[20]

The overall poverty level among rural populations in Nepal is 34.6 percent. Yet, poverty levels are highest in Far West and Midwest Hill and Mountain districts. Based on the table below, poverty incidence in Hill and Midwestern districts is higher than in other parts of the country, even though there have been declines in recent years[21].

TABLE: Poverty head count (Percent) -- From EFNSN, p. 101

Region	Sub-region	Poverty headcount (%)		
		1995-96	2003-04	% Change
Nepal		41.8	30.8	-26
Residence	Urban	21.6	9.6	-56
	Rural	43.3	34.6	-20
Ecological belts	Mountain	57	32.6	-43
	Hill	40.7	34.5	-15
	Terai	40.3	27.6	-32
Development regions/ sub-regions	Eastern	38.9	29.3	-25
	Central	32.5	27.1	-17
	Western	38.6	27.1	-30
	Mid-western	59.9	44.8	-25
	Far-western	63.9	41	-36
	Kathmandu	4.3	3.3	-23
	Other urban	31.6	13.0	-59
	Rural Western Hill	55.0	37.4	-32
	Rural Eastern Hill	36.1	429.	19
	Rural Western *Terai*	46.1	38.1	-17
	Rural Eastern *Terai*	37.2	24.9	-33

Source: CBS, 2005

[20] EFNSN, p. 5
[21] Ibid, p. 101

Food consumption patterns are now shifting toward high value products, including vegetables and fruits, livestock products as well as better quality rice. These increases are taking place across income quintiles[22]. Consumption of maize, wheat flour and coarse rice has decreased in favor of a more diverse and nutritious diet. It is likely this has occurred as a result of overall income increases. Consumption of coarse rice has reduced marginally, while consumption of wheat flour and maize has reduced significantly. However, fine rice and maize flour intake have increased substantially so cereals still play a significant role in the diet[23].

Nonetheless, the most increases have been in potato consumption, and in the poultry and fish sectors where consumption has increased substantially from a very low base. Interestingly these changing consumption patterns were most common among low-income households than among others. It is interesting to note that household expenditures on food have gone down as a share of total expenditures – which is consistent with an overall fall in poverty levels. [24]

TABLE: Share of average monthly household expenditure, by region (percent) 2005/06

Food Item	Residence			Ecological Region			Urban Mkt Centre (KBL)
	Rural	Urban	Nepal	*Terai*	Hills	Mountain	
Grains & Cereal	32.4	29.5	30.7	30.5	30.6	33.3	29.4
Legume Varieties	4.3	4.1	4.2	4.7	3.9	4.1	3.7
Vegetables & Fruits	15.5	17.7	16.8	16.7	17.2	14.5	18.3
Livestock & Fisheries	19.3	19.2	19.2	19.2	19.1	20.5	17.5
Others	28.4	29.4	29.0	28.9	29.2	27.7	31.1
Food & Beverages to total Exp.	44.1	35.8	38.9	38.6	38.3	47.5	35.2

Source: NRB, 2008.

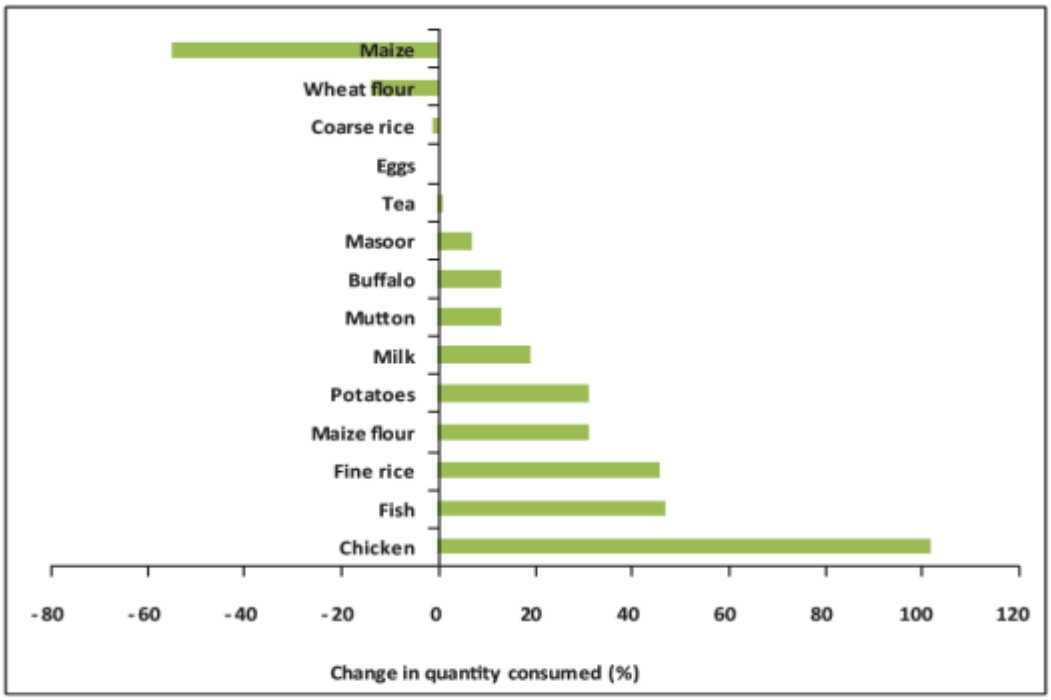
From EFNSN, p.51

The chart above shows that the proportion of expenditures on all foods is highest in rural areas and in the mountains. However, it is possible that the cost of food is higher in these areas, especially in the case of grains and cereals that must be transported from other areas. Although the overall proportion of income spent on food is higher, it is distributed among a number of food items, indicating consumption of different food groups. In the Hill and Terai regions, the proportion of income spent on food still exceeds one-third of the household budget, which is relatively high, and the major expenditures are on cereals and grains, although expenditures on livestock products and fruits and vegetables is also significant. So, although poverty levels as indicated by the proportion of income spent on food are relative higher in the Mountain regions, they still remain high in both the Hills and Terai based on these figures.

Changes in food habits may seem greater among the poor because the proportion of their income going to food expenses starts out significantly higher than that of other groups. This pattern is consistent with the fact that the rate of Nepal's poverty reduction has exceeded that of other South Asian countries. At the same time, recent increases in fruit and vegetable production among rural dwellers may make these products more accessible to poor people. Nonetheless, the chart below indicates an increase in overall demand for a number of high value products, including potatoes, and most notably chicken.

[22] Ibid, p. 51
[23] Ibid.
[24] Ibid.

FIGURE: Percentage change in quantity consumed of key food items, 1995/96-2003/04

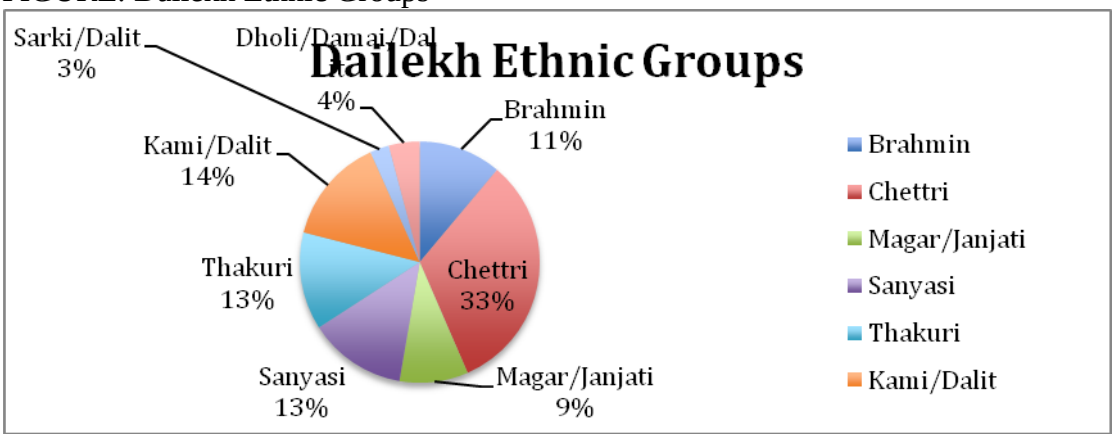


Source: CBS 2005

From EFNSN, p.52

Certain groups are more likely to be excluded from the benefits of the poverty reduction efforts of recent years, and this has a significant negative impact on food access. In particular, these groups include Dalits and Janjatis. From the household survey conducted in Dailekh, we learned that a Dalit family has only recently been integrated into a village cooperative, and were able to take a loan to buy land. According to a WFP monitor, the caste system continues to influence the social structure in many parts of Dailekh, a Midwestern Hill district. However, in Dailekh, 21 percent of the population is made up of various Hill Dalits (Kami, Sarki, Dholi/Damai), and another 9 percent are Magars, who are indigenous Janjatis. Thus, nearly one-third of the population consists of groups that may experience some level of social and economic exclusion, and hence limited food access.

FIGURE: Dailekh Ethnic Groups



Source: CBS, 2010

Women also face social exclusion and limitations with regard to participation in agriculture. Some major constraints include the fact that women contribute to agricultural labor, but don't

participate in most decisions related to crop and livestock production. In addition, women are not able to own land, and cannot mortgage their land to take loans. If they are widowed, women cannot take ownership of their husband's land until her son reaches adulthood. These limitations reduce women's access to credit, and leave them with little power to make decisions in the absence of their husbands. As many men migrate to find paid work, women are often unable to make decisions about essential farming activities during the time their husbands are not present. Many attitudes are changing as women start to take on roles formerly held by men. Yet, for many these roles are difficult and new, and in some cases hampered by laws that have not changed with the times. (See Section VI for more details regarding Gender and Diversity).

Another group that faces significant social and economic exclusion are people with little or no access to land that depend on land leasing and casual agricultural employment for their livelihoods. Agricultural wage laborers and self-employed people out-number other workers and their numbers showed little decline between 1995/96 and 2003/04[25]. Most wage earners in the agriculture sector are estimated to be poor, and this has declined little during the period.

If land holding size is taken into consideration, the number and concentration of poor people who are small and marginal land holders are the highest of all occupation groups, and show the lowest rate of decline. While the number of Nepali households with access to land is 78.4 percent, the size of plots and productivity among small holders appears to be declining, making it harder for such groups to move out of poverty[26]. Thus, it can be concluded that the vast majority of poor people have little in the way of land assets, produce very little, and must depend to a great extent on income from agricultural or other casual labor to purchase food. Extremely poor people depend on wage labor in order to make up the difference between what they produce and sell, and food costs during the hunger season.

However, there is some evidence that informal loans are also used by households to help fulfill their household needs, including those for food. The Agricultural Development Bank Limited (ADBL) has been the largest lender in Nepal over the years, yet a number of new banks, credit providers and micro-finance lenders have recently entered the market. Only 15.1 percent of borrowers use ADBL, and only 24.2 percent of loans have been for business or farm work purposes. Most loans have been used to support household consumption (i.e. in times of need), although the major sources of credit have been and continue to be moneylenders and relatives[27].

TABLE: Cultivated land per person and per household (2000)

Region	Cultivated land per person (ha)	
	1981 based on LRMP 1978/79 land use statistics[1]	2001 based on JAFTA 2000 land use statistics[2]
Mountain	1.047	0.307
Hill	0.223	0.163
Terai	0.219	0.167
Nepal	0.29	0.175

From EFNSN, p. 101

[25] EFNSN, p. 50
[26] Ibid, p.50
[27] Ibid, p. 31

Interestingly, cultivated land per person in the Hill and Terai districts is on average lowest, and highest in Mountain districts. This is in large part due to the low population density in Mountain districts.

TABLE: Distribution of land and population across ecological regions of Nepal

Ecological Region	Share of total geographical area (%)	Share of total population (%)
Terai	23%	48.4%
Hills	42%	44.3%
Mountains	35%	7.3%

Source: Geographical area from MoAC(2009) and CBS, 2003a for population figures

From EFNSN, p. 12

While productivity of land in Hill districts is higher than in the mountains, and land productivity in the Terai is far higher than both of the other ecological regions, the number of people depending on that productivity is also extremely high. However, a good proportion of what is produced is sold on the market, thus there is not a direct relationship between quantities produced and quantities consumed. While the percentage of people living in the Terai who are poor has decreased over the years, the overall proportion of Nepal's poor living in the Terai has increased due to the growing population there. Thus, while the Terai districts produce food surpluses, many Terai residents – particularly farmers with small landholdings – are poor and have difficulties purchasing sufficient food for their households.

TABLE: Poverty headcount (percent) and distribution of poor population (percent) Nepal

Region	Sub-region	Poverty headcount (%)			Distribution of the poor population (%)		
		1995-96	2003-04	% Change	1995-96	2003-04	% Change
Nepal		41.8	30.8	-26	100	100	-
Residence	Urban	21.6	9.6	-56	3.6	4.7	30
	Rural	43.3	34.6	-20	96.4	95.3	-1
Ecological belts	Mountain	57	32.6	-43	10.7	7.5	-30
	Hill	40.7	34.5	-15	41.9	47.1	13
	Terai	40.3	27.6	-32	47.4	45.4	-4

Source: CBS, 2005

From EFNSN, p. 44

This is very much the case in Terai VDCs that are impacted by floods according to a WFP monitor. In these areas, many small farmers lease land from large landowners. In addition, in some very productive districts large numbers of small landless leaseholders are dependent on farming small tracts on huge farms. For instance, the average land holding in Kapilvastu district in Western region is 1.25 Hectares. However, poor laborers, generally made up of lower casts and indigenous people work this land (See Section V). These workers depend on small wages and are at the mercy of many hazards that can cause crop failure, food price spikes, or crippling dept.

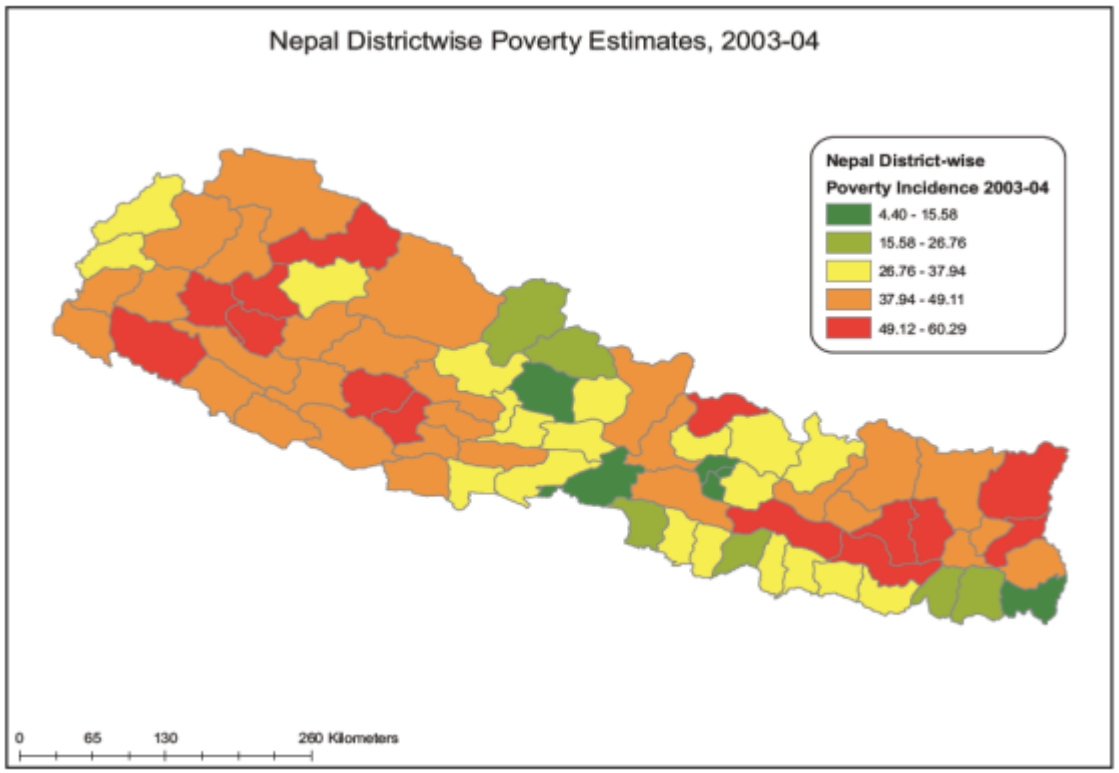
The general structure of the land-leading system entails leaseholders providing a portion of what they produce to landowners as payment in kind (about 10 percent of whatever crops are produced), or they pay in cash. Often these leases are held over several years (3-5 years) and an MOU is agreed to with the landowner regarding size and form of payment. Land-leasers must purchase their own inputs, and generally take loans for this purpose. In good years,

most land-leasers are able to sell most of their crops after meeting their household food needs and making payment in-kind or in cash to the landowner. However, if crops are lost – for example due to flooding – landowners usually forgive annual rent payments. Unfortunately, the lease-holder does not get a share of the food produced to fulfill household food needs, and must continue to make loan payments without income from crop sales. This can easily use up any savings and leave households destitute until the following year. Even if the leaseholder can produce a good harvest in the next year, paying off the previous-year's debt becomes a priority, forcing these farmers to sell quickly for low prices. This reduces income over time, and reduces the amount and type of food available for household consumption (the higher value commodities will be sold first). These farmers may eventually become mired in debt, and the proportion of food produced that is consumed will diminish, impacting nutrition (see Utilization section below).

A different pattern takes place among households in Hill districts. These households depend to a great extent on food purchases in order to meet their food needs through much of the year. The women's self-reliant group in a village in Salyan stated that they needed to buy staple food for anywhere from 10 to 12 months out of the year. Members of the women's focus group in Surkhet said they needed to purchase food for at least 6 months out of the year. At the same time, respondents to a household survey in Dailekh needed to depend on food purchases for 7 months out of the year. These households engaged in a number of income generating activities, including conducting agricultural sales and casual wage labor – both agricultural and non-agricultural. Thus, these households depend significantly on the market to fulfill their household food requirements, even though they produce food for much of the year.

Mountain districts host the second highest proportion of poor people next to Hill districts. In the Mountains, access to food is severely limited by lack of access to roads and markets, and by poor productivity as discussed above in the section on Availability. As there is limited road connectivity to these areas, and those areas that are connected are generally inaccessible during much of the year, significant investments in infrastructure are required to improve food access in these districts. In the meantime, high food prices are a particular problem in these areas due to the high cost of transportation (in some areas food is flown in). These are reflected in the high proportion of income expended on food (see above). Food safety nets provided by WFP and the Nepal National Food Corporation address the needs of food insecure households that cannot purchase or access food through the market system.

MAP: District-wise poverty prevalence estimates (2003-04)



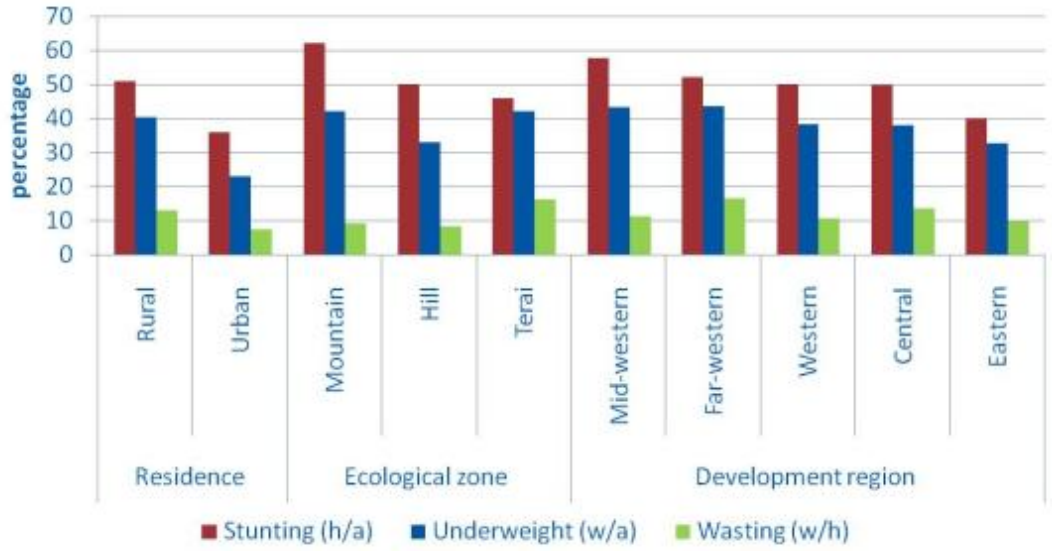
Source: Map generated by Authors' based on data from CBS et al (2006)
From EFNSN, page 45

However, based on the above map, poverty prevalence is highest in the Mid-West, Eastern, and Far-West Regions with a poverty prevalence in most districts being higher than 37.94 percent. Based on the map above, poverty prevalence in 14 of 15 districts in the Mid-West Region exceeds 37.94 percent, while 7 of 9 districts in the Far West, and 11 of 16 districts in Eastern Region exceed this prevalence. Poverty prevalence exceeds 49.11 percent in five Midwest districts and also in five Far West districts. Only one district in Midwest and two districts in Far West fall below 37.94 percent prevalence, while 5 Eastern districts fall below this threshold of poverty prevalence. Poverty prevalence in Western Region districts, while on a regional level is lower than that of Midwest and Far West districts, poverty is higher in the Hill and Terai districts bordering on Midwest including Arghakhachi, Gulmi, Palpa, and Kapilvastu and in Gorkha, a Mountain district. Poverty prevalence is mostly low in Central region, yet poverty prevalence in some Hill and Mountain districts is relatively high.

3. Food Utilization or Absorption

While proper food utilization depends to a great extent on the level of food availability and access, other factors also contribute. Bodies require adequate caloric consumption to ensure survival. However, they also require adequate supplies of micronutrients such as vitamins and minerals in order to develop adequately and maintain health. This section will review the adequacy of both types of nutrition in Nepal, and what these data tells us about food security in various Development and Ecological Regions.

FIGURE: Malnutrition Indicators across regions in Nepal (children under 5 years), 2006



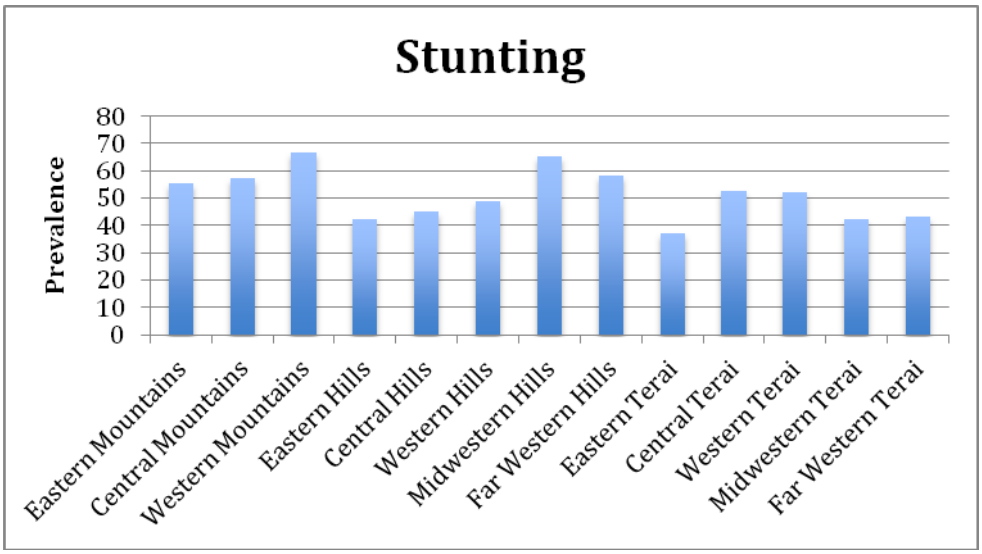
From IFPRI Presentation, January 2011, based on DHS 2006

The table above references three indicators of malnutrition: Stunting or Height for Age (h/a), Underweight or Weight for Age (w/a), and Wasting or Weight for Height (w/h). These measurements are based on height and weight measurements taken on children under the age of five years old. Throughout rural and urban areas, ecological zones and development regions, stunting is the most prevalent type of malnutrition, followed by underweight, and wasting is least prevalent.

Stunting, or low height for age, occurs if inadequate nutrients – both micronutrients and macronutrients – are not provided in adequate quantities to children from conception until the age of two. This is now often referred to as the "1000 days". When children begin to consume food, they do not only need to consume enough food and satisfy caloric adequacy, but they need to consume a diverse diet consisting of a variety of foods including various vegetables, fruits, and foods providing animal-based proteins.

If infant and young child feeding is not adequate, children become stunted, and this condition is not reversible beyond after age two. It is possible to reverse stunting, but, once again, this is only possible within the "1000 days" before children reach the age of two. In poor households where fewer diverse foods are consumed, ensuring that infants receive the right types of food at the right times is difficult. If this occurs throughout the period of conception until the time a child reaches age two (nearly three years), this will likely indicate a situation of chronic poverty, given the extended timeframe.

FIGURE: Prevalence of Stunting by Sub-Region



DHS, 2006, page 194

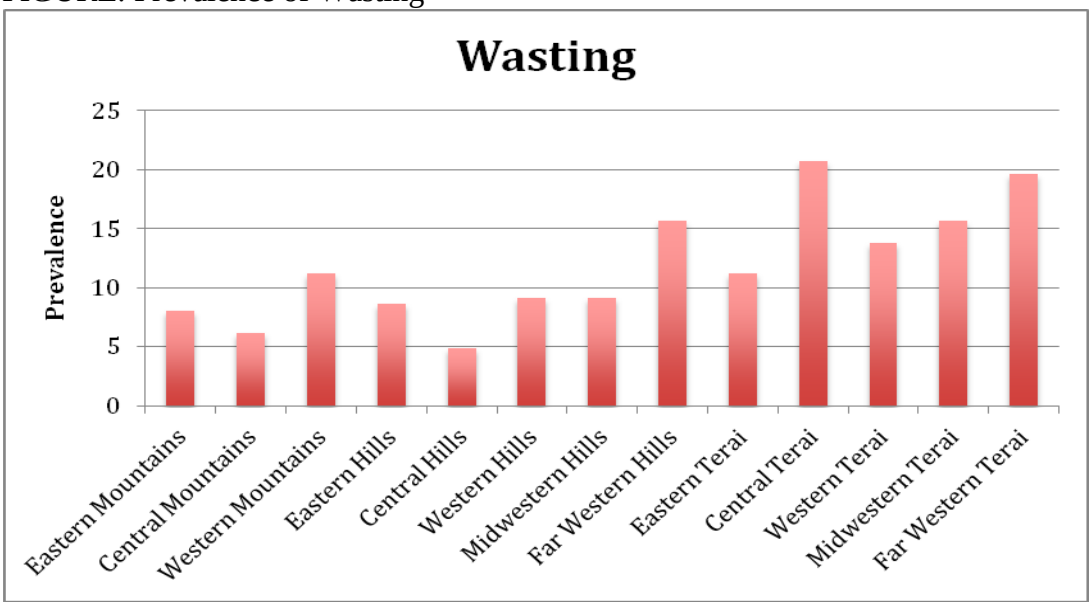
The districts in Nepal with the highest stunting prevalence are those in the Western Mountains. Districts in the Midwestern Hills have the highest stunting levels among Hill districts and have the second highest in prevalence in the country. Among Terai districts, stunting was most prevalent in the Central Terai, followed closely by Western Terai. As a number of these areas also have high poverty prevalence, there appears to be a credible link between poverty and stunting prevalence. The linkage between these two elements likely results from households not having adequate access to sufficient quality and quantity of food to ensure that all of the dietary needs of mothers and children, and, indeed, the entire household are met.

Wasting, or low weight for height, results from inadequate caloric in-take. While stunting takes two to three years to become established, wasting occurs in only a few weeks. While stunting only occurs prior to age two and cannot be reversed after that time, wasting can take place throughout life and can be reversed through therapeutic nutrition. While stunted children can continue to live through to adulthood, if wasting persists, individuals will eventually die of starvation. Wasting is often referred to as "acute malnutrition" because it occurs quickly, has a severe impact on health, and can result in death. Wasting can occur among individuals who are already stunted.

Wasting tends to occur as a result of an immediate acute loss of access to food. This often occurs as a result of displacement or some other type of humanitarian disaster that results in a rapid drop in food intake. According to the World Health Organization, if the prevalence of acute malnutrition falls below 5 percent, this is not a problematic condition. However, prevalence between 5 and 9 percent is considered poor, between 10 and 15 percent is considered serious, and above 15 percent is considered alarming[28].

[28] http://conflict.lshtm.ac.uk/page_136.htm

FIGURE: Prevalence of Wasting



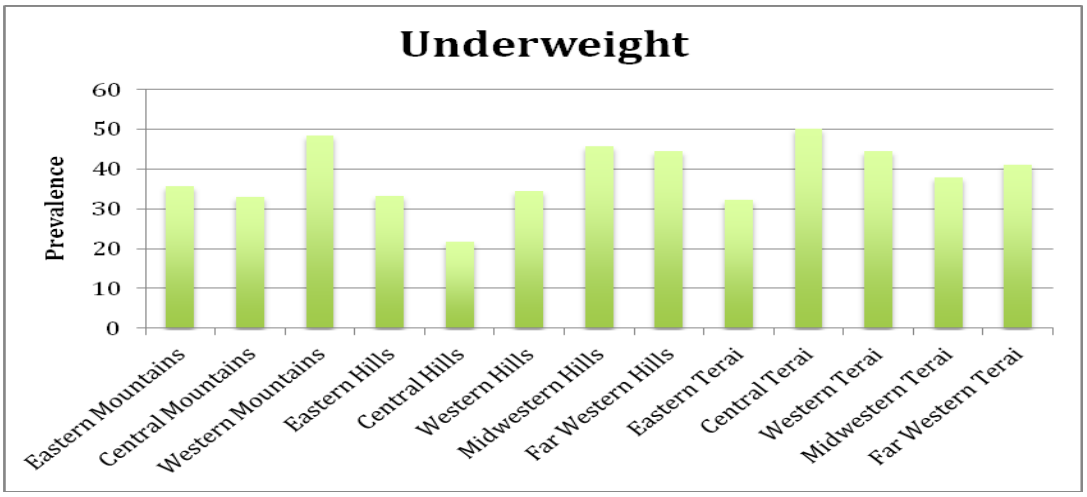
DHS, 2006, page 194

Based on this chart, in accordance with the WHO criteria, the prevalence of wasting is above acceptable levels in all areas of Nepal except in the Central Hills. Among Mountain districts, the highest prevalence is in the Western Mountains. Wasting here is serious with a prevalence of 11.2 percent; and is poor in Central and Eastern Mountain districts. In all hill districts other than the Central Hills, wasting is a problem. Wasting is poor in Western and Midwestern Hills, and alarming in the Far Western Hills at 15.7 percent. However, wasting is most prevalent in the Terai, and reaches levels generally only seen in emergency situations. The highest prevalence of wasting is in the Central Terai at 20.7 percent, and is thus alarming according to WHO. The Far Western Terai at 19.6 percent and Midwestern Terai at 15.7 percent are also classified as alarming. The Western Terai is only slightly better at 13.8 percent, and would be classified as severe.

It should be noted that wasting or acute malnutrition tends to occur in response to a severe food shortage. Thus, at the time that this data was collected, population groups – particularly in the Terai – were experiencing some type of stress to food supplies. It is not known whether the same conditions exist at this time or not. As this area is prone to shock, over time, the capacity of residents to cope with shocks can decline, and the impact of any shock can be severe.

Underweight is a condition of low weight for age. This measurement tends to be used as an index indicator of stunting and wasting which summarizes nutritional status overall for a geographic area. While stunting and wasting point to specific and distinct conditions, underweight gives a more general picture of nutritional status. This indicator is often used for comparative purposes or to measure changes in nutritional status over time. In order to ensure the greatest reduction in underweight, it is necessary to reduce stunting and/or wasting - that is, chronic malnutrition and poverty and/or acute malnutrition and vulnerability.

FIGURE: Prevalence of Underweight



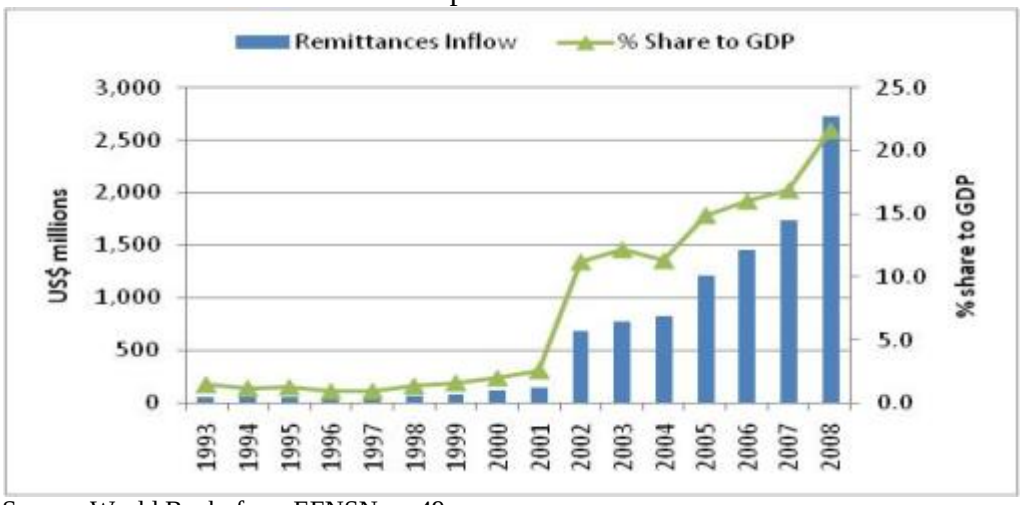
DHS, 2006, page 194

Overall, among mountain districts, prevalence of stunting, wasting and underweight are highest in the Western mountains. Among the Hill districts, the Midwestern and Far Western Hill districts have the highest malnutrition prevalence. Among Terai districts, stunting, wasting, and underweight are all most elevated in the Central Terai. However, all Terai districts cope with severe or alarming wasting prevalence according to this data.

3. Remittances:

This does not include large and growing number the number of rural household members – almost exclusively men - who are migrating for work to in Nepal's urban areas, India or other countries for work. Of these, 17 percent of remittances come from within Nepal, 11 percent come from India, nearly 16 percent are from Malaysia, 18 percent come from Qatar, and 24 percent are from other countries. India attracts the most works at 26 percent, yet the value of these remittances is very low considering this. Overall, remittances sent by migrant workers now account for over 20 percent of GDP, and account for about 10 percent of rural incomes.[29] One woman attending a focus group noted, "I have it easy because my husband is in Saudi".

FIGURE: Remittance inflow in Nepal



Source: World Bank; from EFNSN, p. 49

[29] Ibid, p. 49

ANNEX C: FOOD BALANCE SHEET AND RECENT TRENDS

1. Midwestern Region

If one reviews the overall food balance sheet (table 1) of the proposed districts of the Midwest region, there is net food deficit of 16,987.85 MT of food, which results in a 213.25 kg food deficiency per person per year. Only four Terai and inner valley (Terai) districts are food surplus. Despite the food surplus status in the region, the productivity of Midwest region is declining, chiefly for major crops such as wheat, maize, potato and lentils. In the fiscal year 2007/08, the productivity of wheat was retained at the level of 1.9, but was 1.63 for the fiscal year 2008/09. In the same vein, productivity has declined by almost 0.9% for potatoes, which is another chief crop. The trend is the same for vegetable and maize productivity despite quite a marginal difference in the productivity level of maize if compared across the two fiscal years[30].

In recent years there have been severe climatic impacts in the Mid- and Far West regions. Excessive rainfalls and droughts have adversely affected these regions. For example, Bajura (a district in Far West region) was affected by drought, while some Midwest districts received intense and excessive rainfall that eventually resulted in crop losses in some of the Midwest districts. In Dailekh, a decline of 50-70% in paddy production occurred, particularly in the VDCs of Baluwatar, Raniban, Salleri, Rum, Badabhairab, Awalparajul, Goganpani, DandaParajul, Malika and Badalmji. These VDCs were impacted by to excessive rainfall, flooding and landslides. Likewise some of the other 14 VDCs experienced a decrease of 30-50 percent in paddy production. Likewise there was a loss of nearly 50-70 percent in maize production in 11 VDCs of the district. The western belts of Rukum and Rolpa also suffered losses of 40 to 50 percent in their main crop of maize[31]. The other remaining districts that received excessive rainfall include: Dang, Jajarkot and Pyuthan. This also had an adverse impact in the crop production in these districts.

TABLE 9: Food Balance Sheet-2009/2010

S.N	District	Population	Food requirement per person/year	Total demand in MT	Available food in MT	Deficit or surplus per person in KG	Total surplus/deficit in MT
1	Banke	518090	181	93774	97666	7.51	3892.16
2	Bardiya	463934	181	83972	88968	10.77	4996.75
3	Surkhet	341659	201	68673	72092	10.01	3418.54
4	Dang	572446	181	103613	123939	35.51	20326.27
5	Dailekh	265777	201	53421	46989	-24.2	-6431.48
6	Jajarkot	159829	201	32126	12097	-125.31	-20028.63
7	Rolpa	226903	201	47876	30880	-74.9	-10904
8	Rukum	245181	201	49281	48429	-3.48	-852.38
9	Salyan	246505	201	49548	48813	-2.98	-734.5
10	Pyuthan	231075	201	46446	35776	-46.18	-10670.08
Total		3271399		628730	605649	-213.25	-16987.35

2. Western Region

Out of the four western districts, two are food surplus and two are food deficit. Palpa and Kapilvastu hold a surplus of 35,170 MT and 2,374 MT of food respectively whereas the

[30] RAD, 2066/07

[31] WFP/MOAC, 2009/2010

remaining two i.e. Gulmi and Arghakhachi deficit food by 4,821 MT and 4,796 MT respectively. In the Western Terai district, Kapilvastu is one of the biggest rice-producing areas in the country, and thus offers a huge scope for both crop production and value addition. The focus on market linkages and value addition can open up ample scope in this area for creating employment for people who are poor and vulnerable. Gulmi, Arghakhachi and Palpa provide a strong potential for maize and off-seasonal vegetable cultivation. Butwol, as the second biggest vegetable market hub in Nepal, is likely to open up lucrative market opportunities for the sale of off-seasonal vegetables. All of the proposed Hill districts are also potential areas for different kinds of fruits (i.e. oranges, citrus, and banana), as well as gingers. The status of major crops is listed in the table below for each of these proposed districts.

Table 10

Food Balance Sheet for the proposed four western districts									
Year 2007/08	Populace	Rice	Wheat	Maize	Millet	Barley	Total Edible	Reqd	Sur/ Def
Kapilbastu	570980	85977	52396	N/A	115	29	138517	10337	35170
Argakhachi	278838	7577	11042	21743	856	141	41199	45996	-4796
Palpa	291148	12463	9801	36543	2051	9	60895	58521	2374
Gulmi	318522	12463	11678	31862	3049	150	59202	64023	-4821
Total	1409488	118508	84917	90148	5971	329	299813	27187	27927

Source: Intensive Study and Research Centre (ISRC) 2010

ANNEX D: INITIAL ASSESSMENT CRITERIA FOR PROGRAM VDC SELECTION

Data Limitations

Information on food security up to the VDC level is not readily available. Because there have not been locally elected bodies at the district and village levels for several years, the pace of data updating has become very slow and almost does not function according to the officials from the Local Government Community Development Program (LGDCP). The periodic updates and review of the district profiles initiated by the PDDP has not had any support or momentum after the phase out of this program. The latest district profiles found in MLD central library are from the year 2002 and at this point should be deemed not worth taking account of. The latest available database for this ranking purpose was borrowed from the LGCDP Cluster Unit, Midwest Region, which is called "DAG" mapping, or Disadvantaged Group mapping, which is basically the same as poverty mapping, in general terms. The database collected from different DDCs is in general 3-4 years old according to LGCDP Mid-West Cluster Unit Coordinator Mr. Tika Ram Panthi. However, Mr. Panthi also indicated that most of the bilateral partners, along with UN agencies, are designing their programs based on this database.

The population composition pattern is based upon the statistics from the Census 2001. After this census the country underwent huge political upheavals that resulted in massive internal/external migration throughout the country. The conflict also created a considerable number of internally displaced people. At the same time, it should be noted that the population growth rate varies significantly on the basis of people's religious, cultural and other social factors like education. Hence the population data used for this report does not necessarily reflect the exact situation for those districts at the current scenario. It should be assumed that the population figures above only provide a basic idea regarding the ethnic diversities and presence of marginalized communities in particular districts. It is highly recommended that the project conduct some further verification before conducting program interventions. It is important to particularly consult local administrative bodies at the VDC and ward level to assure that accuracy of this data.

Apart from DAG mapping, District Food Security Monitoring bulletins were also consulted for each of the proposed districts. These were obtained via the Nepal Food Security Monitoring System (NeKSAP) Google group. The latest periodic update on the web site was from July-Sep, 2009, and provides a quarterly review of the food security situation. It helped to provide some context regarding the current vulnerability trends despite the fact it was generated almost two years back. The NeKSAP indicators are based on the three pillars of food security: Availability, Accessibility and Utilization.

Limitation:

The major limitation for this methodology is that the database used has not been updated. However, this limitation is being overcome through efforts to correspond with the particular VDCs, and make use of the latest projected population and household numbers for 2011. Any errors retained in the database are likely to affect the quality of the assessment even if wide precautions have been taken to verify this data with officials and field staff/monitors from the regional and district level agricultural offices and WFP respectively.

One other important constraint will be that possibly only one quarter to one third of the VDCs ranked as most vulnerable will be considered for the program due to their limited road

accessibility. The vulnerability ranking provides only the basic framework, which needs further verification from meetings with district level stakeholders that will specifically review the transportation and other infrastructure services that will be vital for accomplishing the program objectives. In other words, this initial vulnerability ranking of VDCs will simply provide a guide rather than a commitment to project activities in those areas. However, as areas are selected, if there is a conflict between two areas that appear to be similar with regard to project selection criteria on such variables such as road accessibility and sub-sector involvement, then the vulnerability ranking will be called upon to ensure that the VDC selected is relatively vulnerable.

ANNEX E: ILLUSTRATIVE APPROACHES BY SUBSECTOR

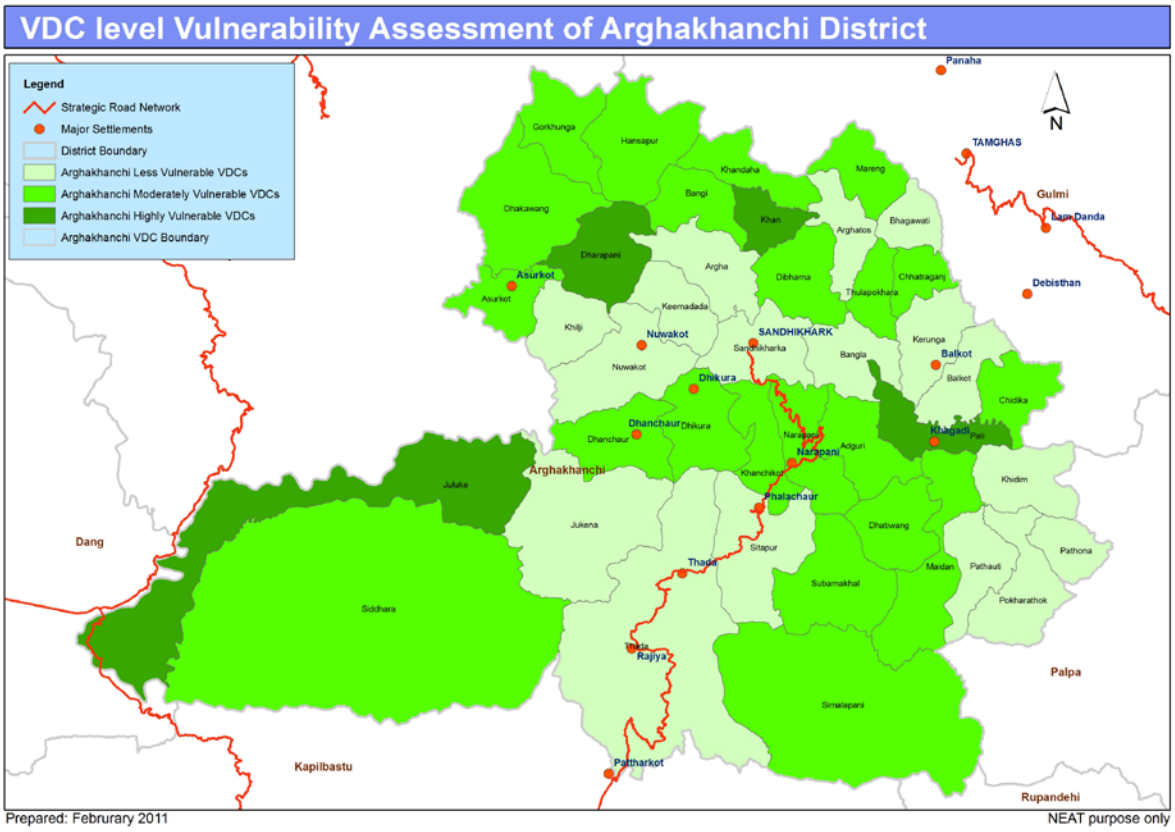
TABLE: Illustrative Approaches by Sub-Sector

	Paddy	Maize	Wheat	Vegetables	Lentils	Ginger	Poultry	Swine	Goats
Input supply related									
Improve access to high quality inputs (seeds, fertilizer, vaccine) through input suppliers (Agro-Vets)	■	■	■	■	■	■	■	■	■
Guide farmers on choice of sub-sector or varieties based on comparative advantage	■	■	■	■	■	■	■	■	■
Develop small-scale irrigation and water harvesting				■	■	■			
Bulk purchasing of agriculture inputs (feed, fertilizer) through cooperative	■	■	■	■	■	■	■	■	■
Cooperatives contract purchase of specialized varieties	■	■	■	■	■	■			
Production related crops									
Train farmers on use of high yielding seeds and optimal fertilizer use	■	■	■	■	■	■			
Train farmers on integrated pest management and organic cultivation	■	■	■	■	■	■			
Train farmers on new cultivation technologies that improve yields	■	■	■	■	■	■			
Train farmers on manure composting	■	■	■	■	■	■	■	■	■
Production related livestock									
Production of various feed grains and fodders							■	■	■
Optimal care of local breeds, including feeding, disease control							■	■	■
Train farmers on construction of animal housing							■	■	■
Post-Harvest related									

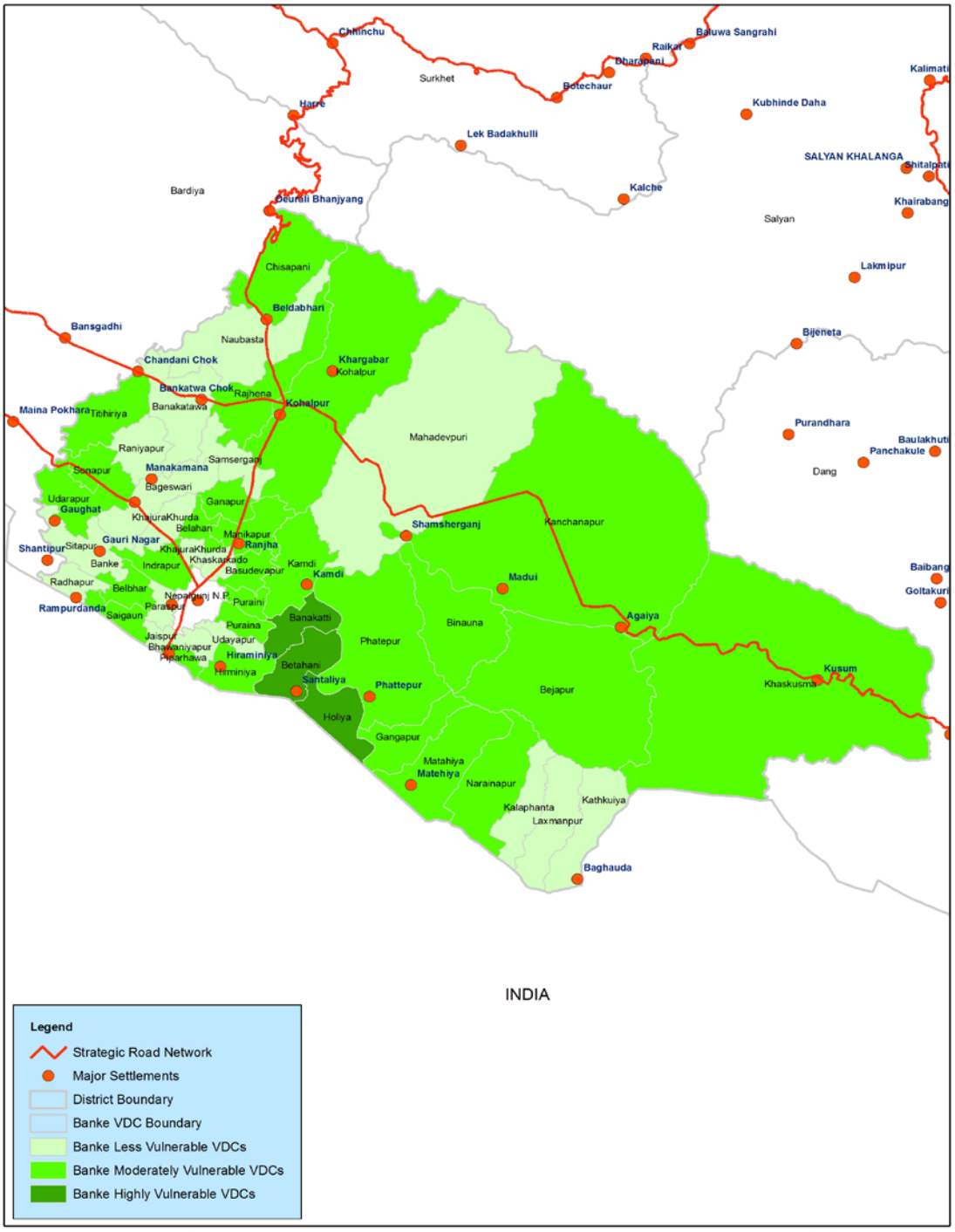
	Paddy	Maize	Wheat	Vegetables	Lentils	Ginger	Poultry	Swine	Goats
Train farmers on optimum harvest-time, cleaning and grading and use of package and transport material	■	■	■	■	■	■			
Reduce post-harvest losses through training of farmers	■	■	■	■	■	■			
Assist farmer groups or cooperatives to identify or construct storage facilities, and support to raise funding	■	■	■	■	■	■			
Marketing related									
Link farmers with wholesalers and traders to learn market requirements		■		■	■	■	■	■	■
Train farmers on marketing and sales to buyers		■		■	■	■	■	■	■
Train farmer groups and cooperatives on effective negotiation skills		■		■	■	■			
Train farmer groups and cooperatives on contracting sales		■		■	■	■			
Identify opportunities for contract growing		■		■	■	■			
Train farmers on requirements for export markets to India and elsewhere				■	■	■			
Mechanization of hulling and selling of by-products	■		■						
Train farmers on value addition and product diversification	■	■	■	■	■	■	■	■	■
Finance related									
Revolving funds for cooperatives (link with Component 5)	■	■	■	■	■	■	■	■	■
Special loan fund for irrigation (link with Component 5)	■	■	■	■	■	■			
Micro-insurance products for crops and livestock (link with Component 5)	■	■	■	■	■	■	■	■	■
Cross-cutting									
Link with Component 2 Value Chain activities				■	■	■			
Encourage cluster farming	■	■	■	■	■	■	■	■	■
Encourage formation of farmer groups	■	■	■	■	■	■	■	■	■
Encourage formation of cooperatives	■	■	■	■	■	■	■	■	■

	Paddy	Maize	Wheat	Vegetables	Lentils	Ginger	Poultry	Swine	Goats
Use cooperative capacity building system									
Organize land-leasing groups									
Ensure participation of landless farmers in cooperatives									

ANNEX F: DISTRICT VULNERABILITY MAPS



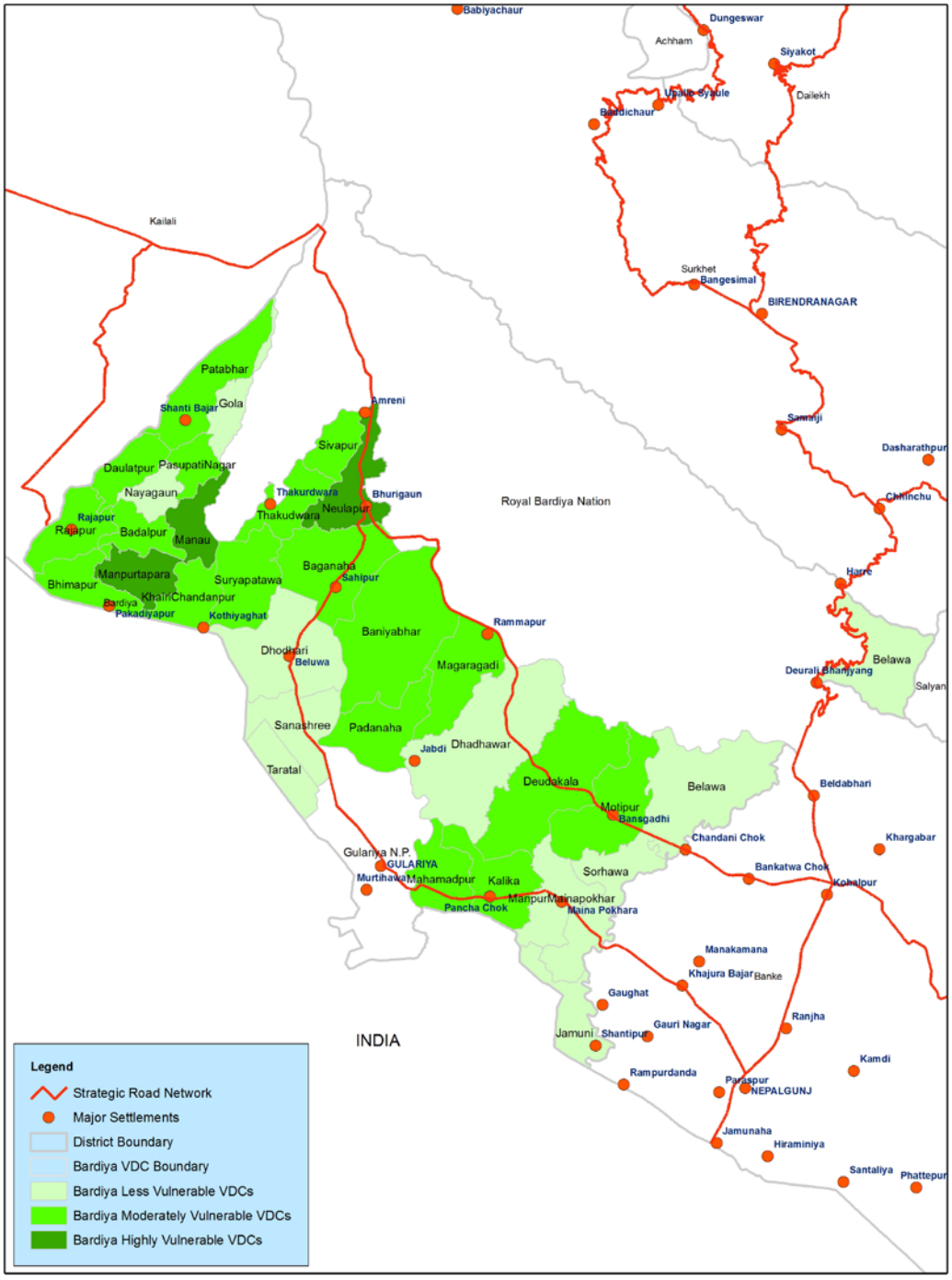
VDC level Vulnerability Assessment of Banke District



Prepared: Februrary 2011

NEAT purpose only

VDC level Vulnerability Assessment of Bardiya District



Prepared: Februrary 2011

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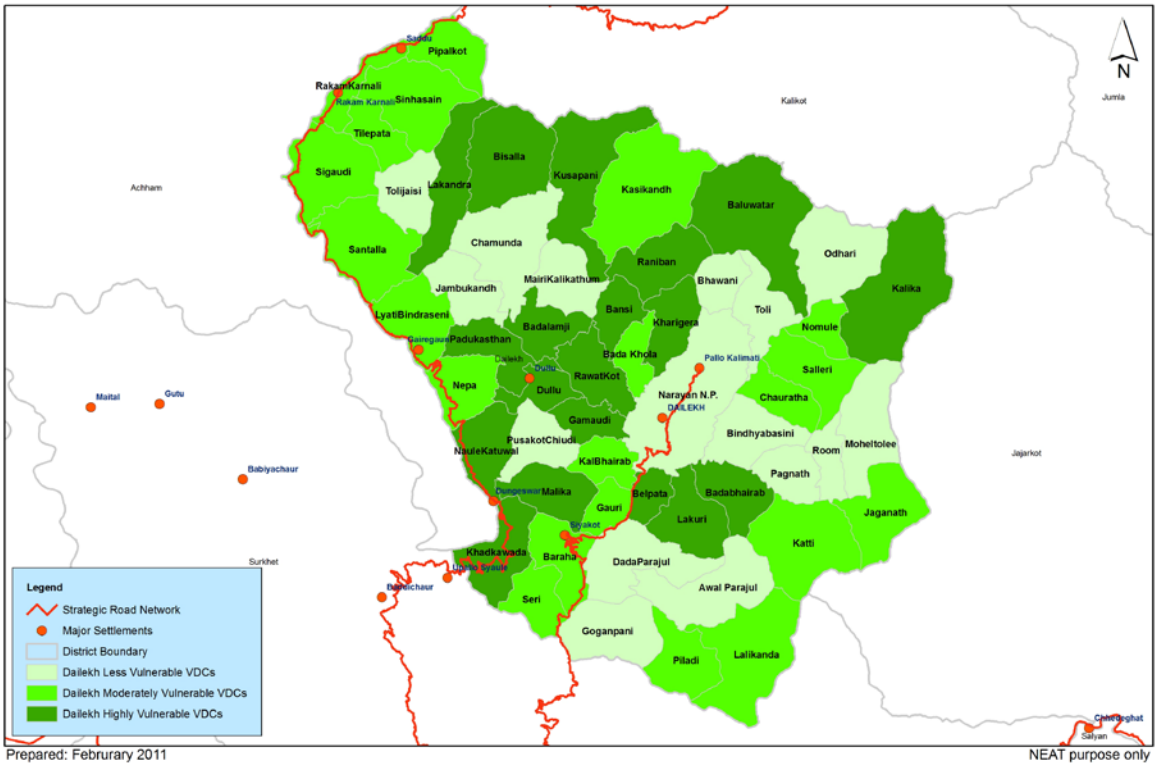
VDC level Vulnerability Assessment of Dailekh District



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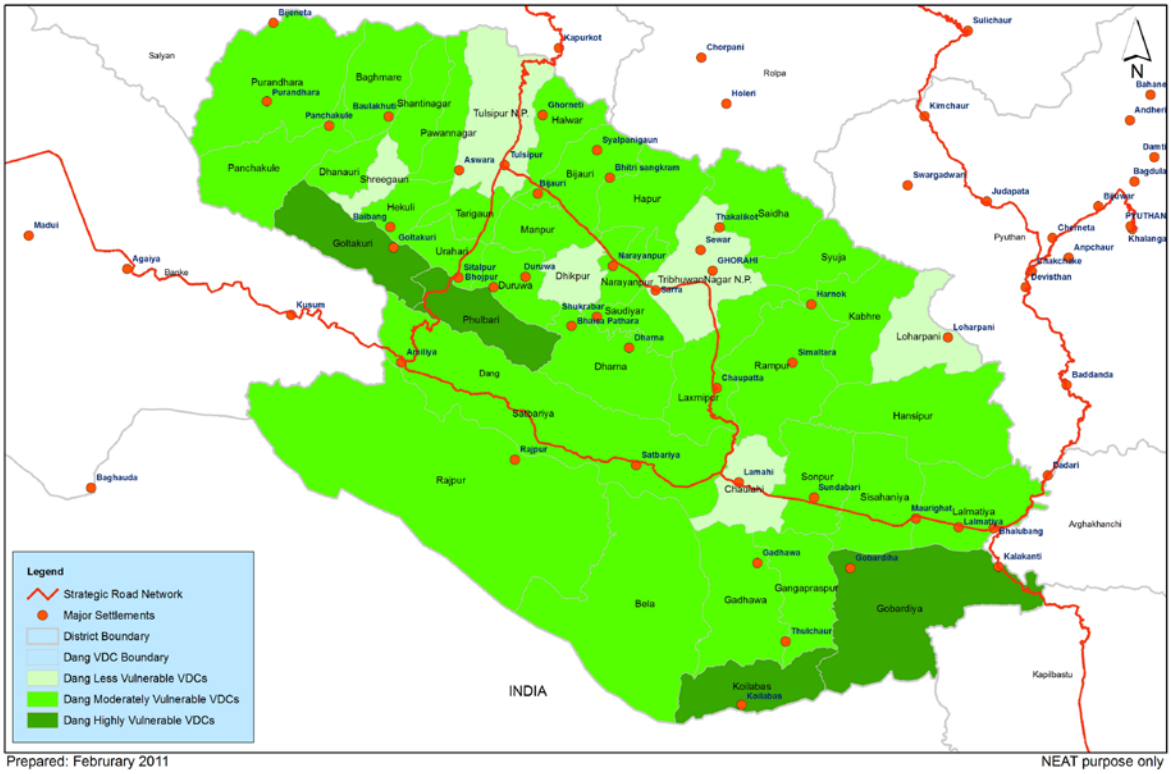
VDC level Vulnerability Assessment of Dang District



Prepared: Februrary 2011

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VDC level Vulnerability Assessment of Gulmi District

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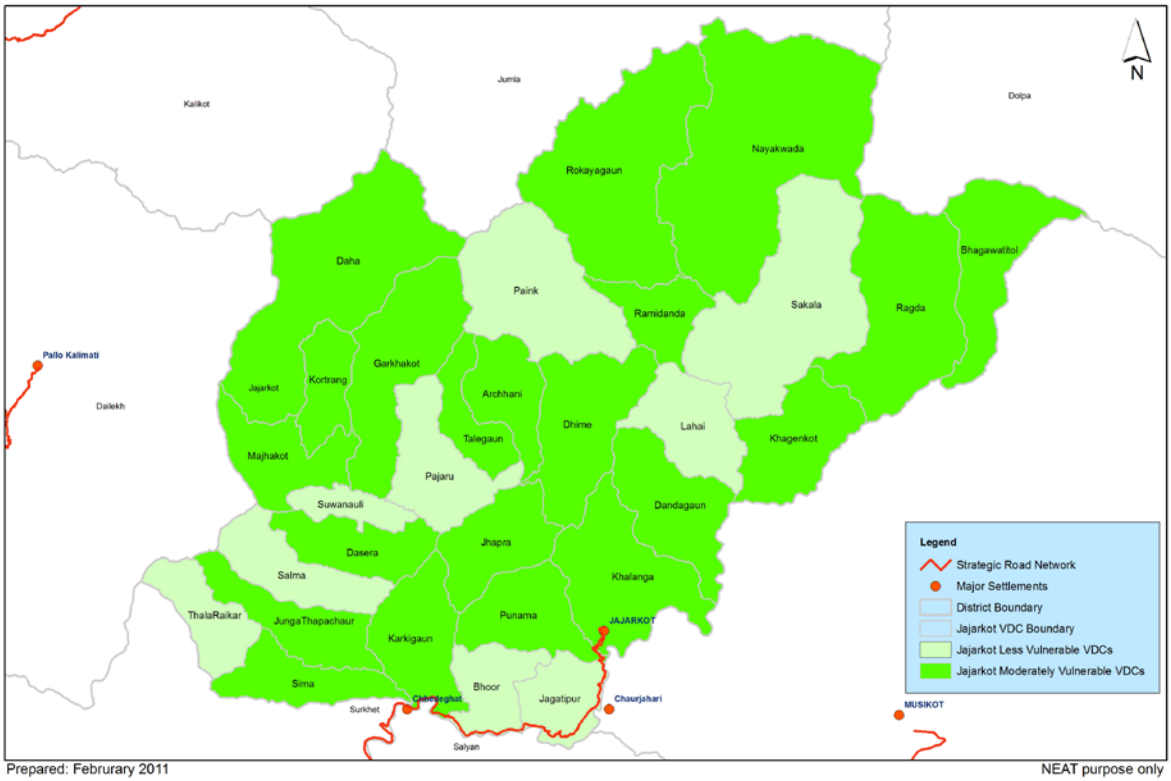
VDC level Vulnerability Assessment of Jajarkot District



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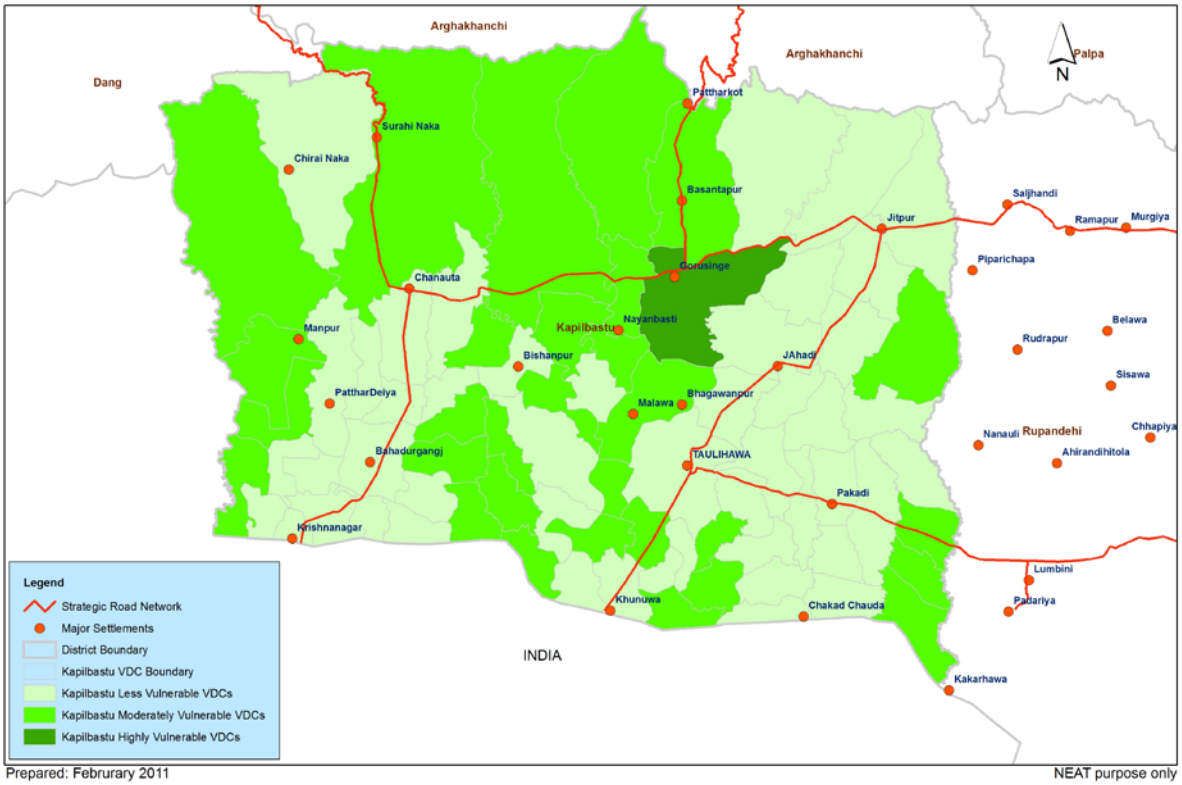
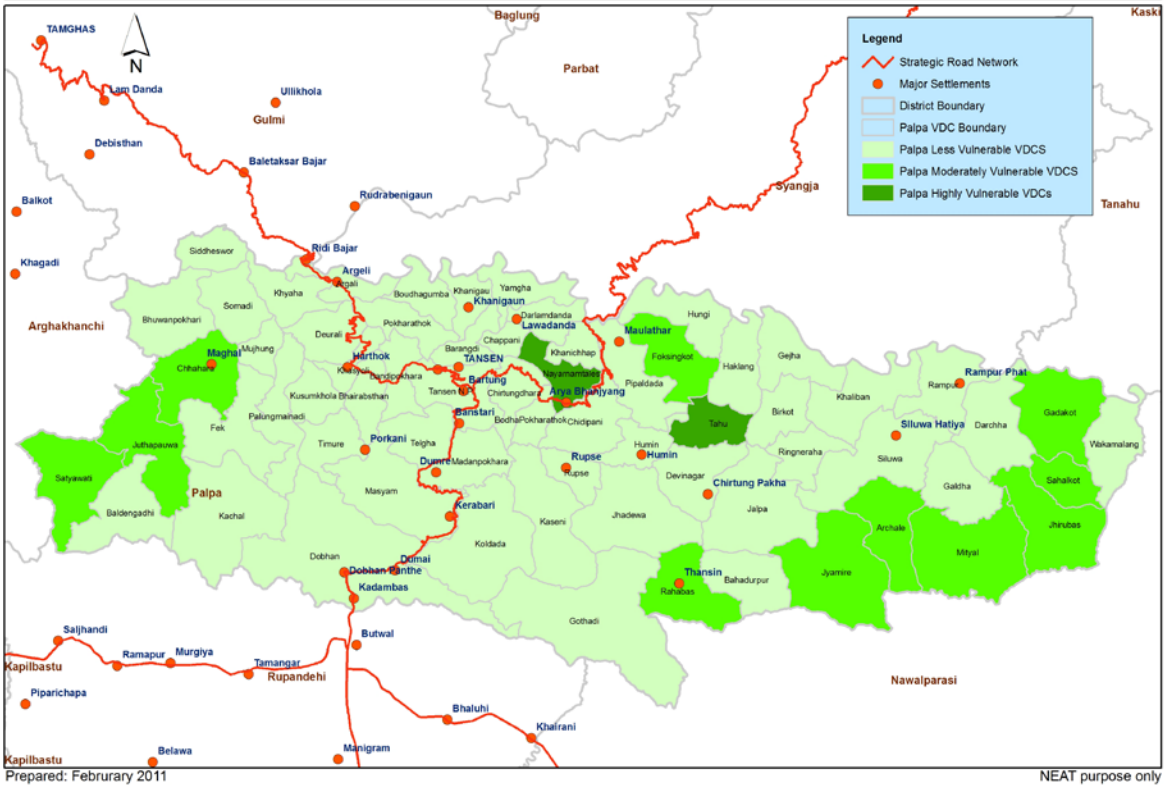
VDC level Vulnerability Assessment of Kapilbastu District

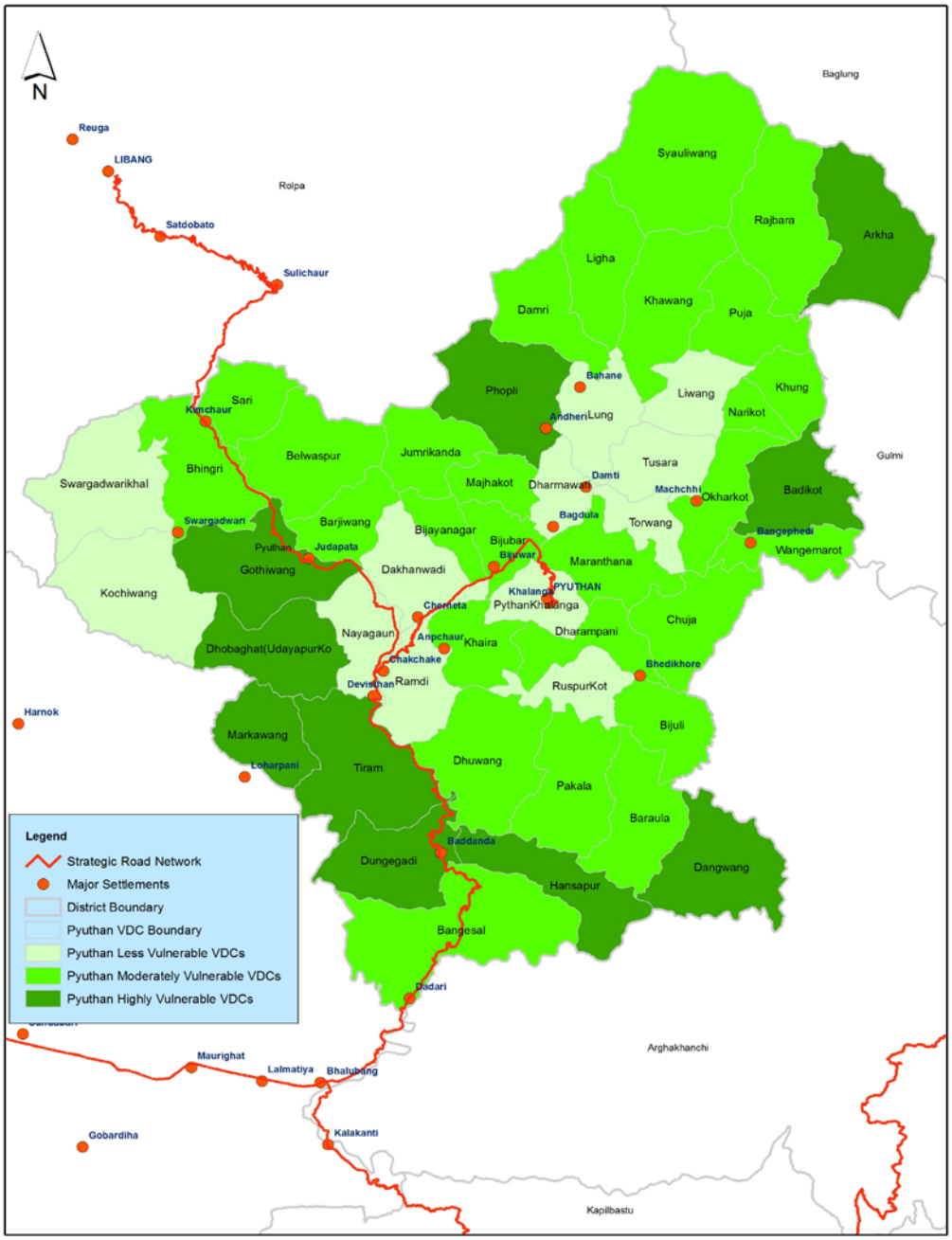


Prepared: Februrary 2011 NEAT purpose only

VDC level Vulnerability Assessment of Palpa District



VDC level Vulnerability Assessment of Pyuthan District



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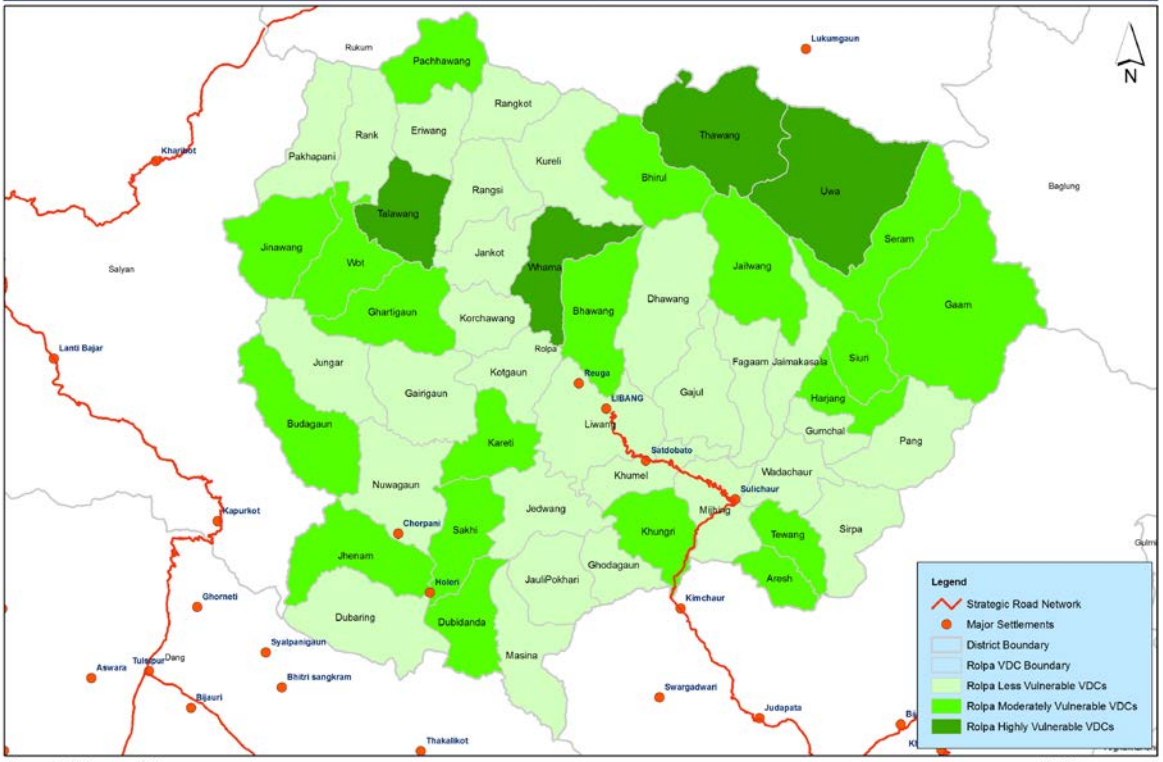
VDC level Vulnerability Assessment of Rolpa District



Prepared: Februrary 2011

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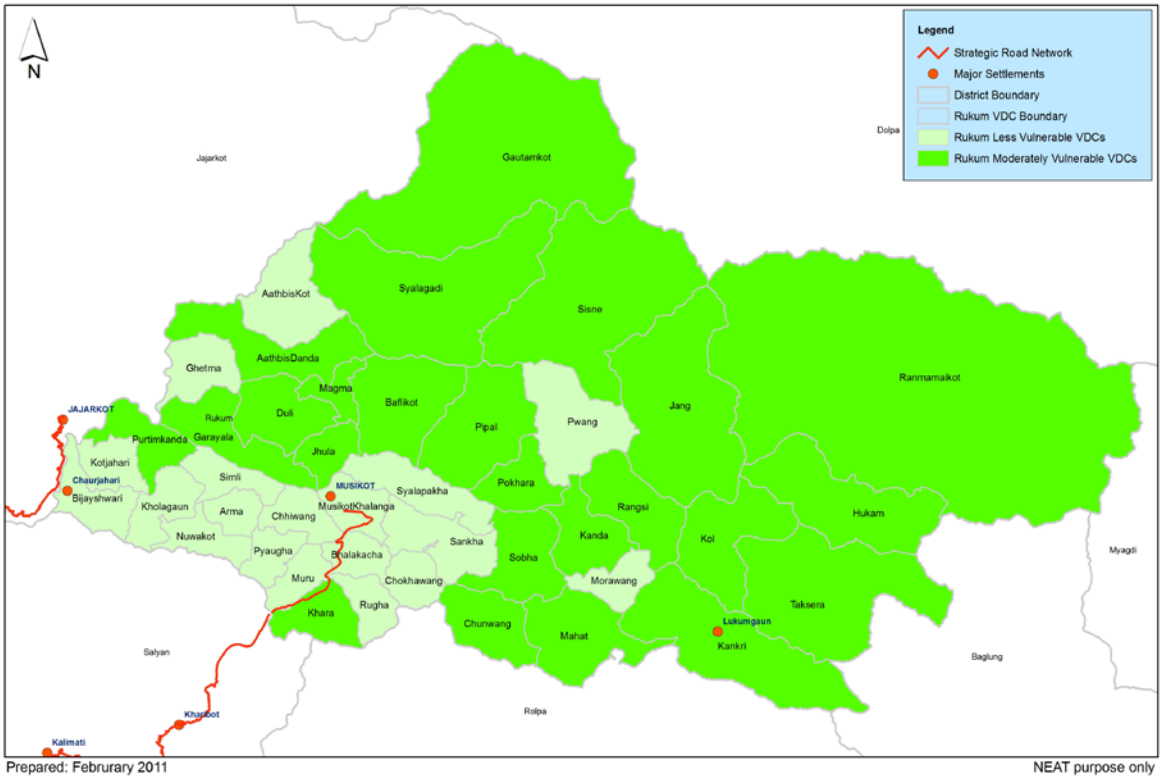
VDC level Vulnerability Assessment of Rukum District



Prepared: Februrary 2011

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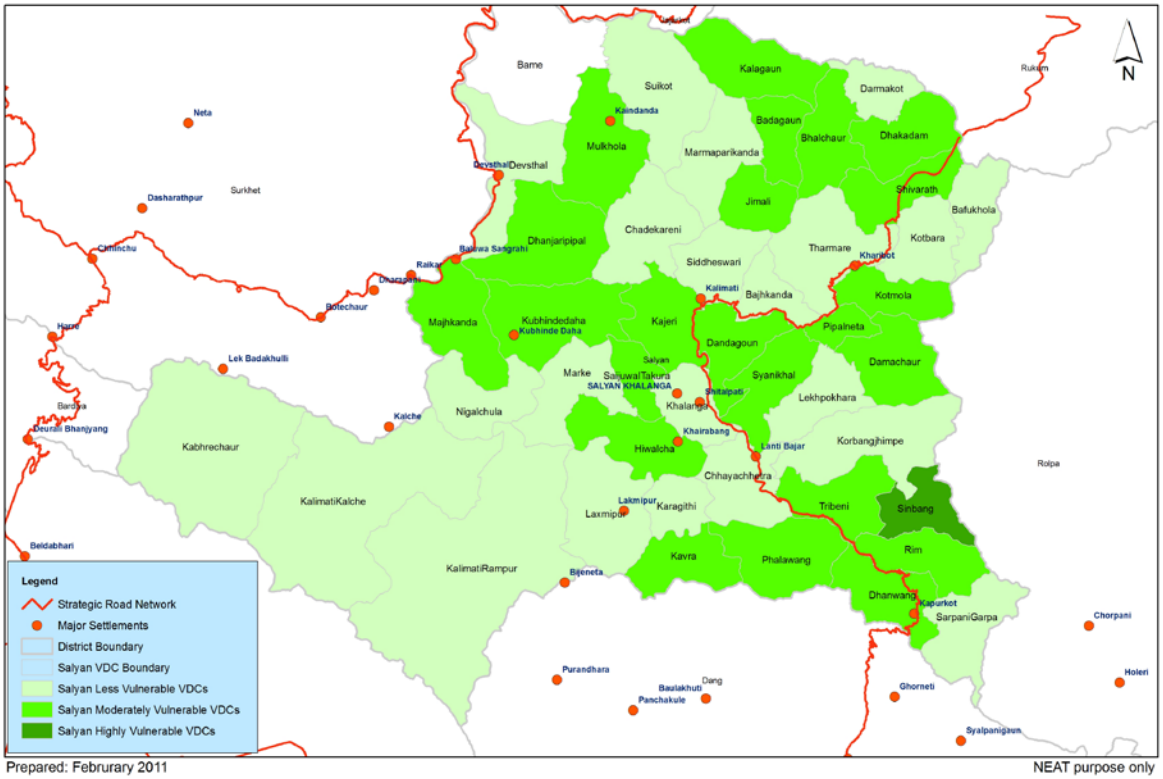
VDC level Vulnerability Assessment of Salyan District



Prepared: Februrary 2011

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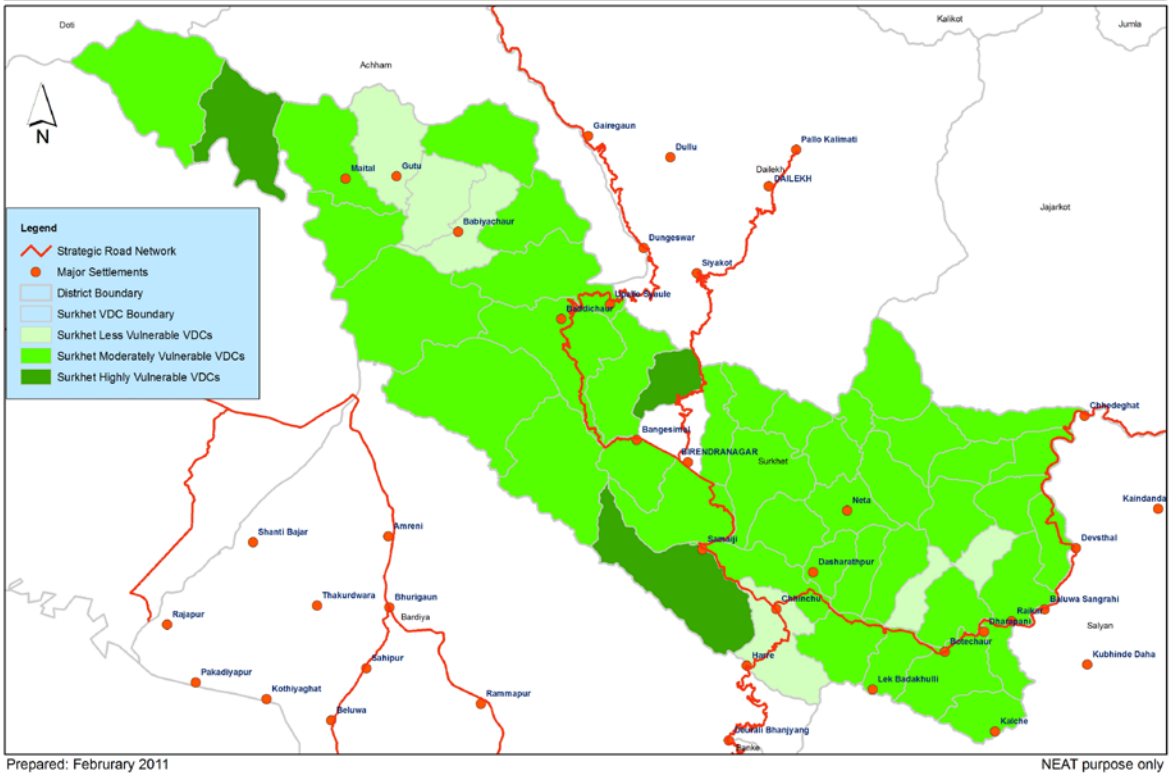
VDC level Vulnerability Assessment of Surkhet District



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